EM-2260-CE/EM-2260 Development Kit User's Manual

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EM-2260-CE/EM-2260 Development Kit User's Manual

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1

Introduction

Thank you for purchasing the MOXA EM-2260 RISC-based industrial ready-to-run embedded module.

This manual introduces the hardware installation, connector interfaces as well as software configurations of the EM-2260 Embedded Module and EM-2260 Development Kit.

The following topics are covered in this chapter:

- **Overview**
- **Appearance**
  - EM-2260 Development Kit
  - EM-2260 Embedded Module
  - EM-2260-DK Carrier Board and Peripheral Extension Board
- **Package Checklist**
- **Features**
- **Hardware Block Diagram**
- **Hardware Specifications**
- **Software Specifications**
- **Applications Development Environment**
- **Networking and Communications Capabilities**
- **Supporting Servers and Daemons**
- **Memory and File Systems**
- **Hive-Based Registry—Contrast to RAM-Based Registry**
- **Dimensions**
  - EM-2260 Embedded ModuleEM-2260-DK Carrier Board
  - EM-2260 Peripheral Extension Board

Overview

The MOXA EM-2260 Embedded Module features Cirrus Logic ARM9 CPU, 128 MB RAM, 32 MB Flash Disk, dual 10/100 Mbps Ethernet, eight digital inputs and eight digital outputs, four high speed serial ports, two USB 2.0 Hosts and an EIDE interface for external storage connection such as CompactFlash card. In addition, with built-in VGA interface, EM-2260 is suitable for SCADA system in industrial applications, that require VGA and HMI features.

The EM-2260 Embedded Module uses Cirrus Logic EP9315 ARM9, 32-bit, 200 MHz RISC CPU. This powerful computing engine supports several useful communication functions, without generating a lot of heat. This module has a compact design that is easily integrated with a variety of industrial applications, including gas stations, vending machines, and ticketing machines, and offers a powerful serial communication capability for better system integration.

The built-in 32 MB NOR Flash ROM and 128 MB SDRAM give you enough memory to run your application software directly on the EM-2260. Programmers will find the pre-installed, ready-to-run Windows CE 6.0 platform and full-function development kit a great benefit for developing software and building reliable communication applications.

The EM-2260 Embedded Module supports general Windows and .NET 2.0 computing environments. This means that programs developed for standard PC operating systems with tools such as Visual Studio 2005 can run on the EM-2260 with little or no porting effort.

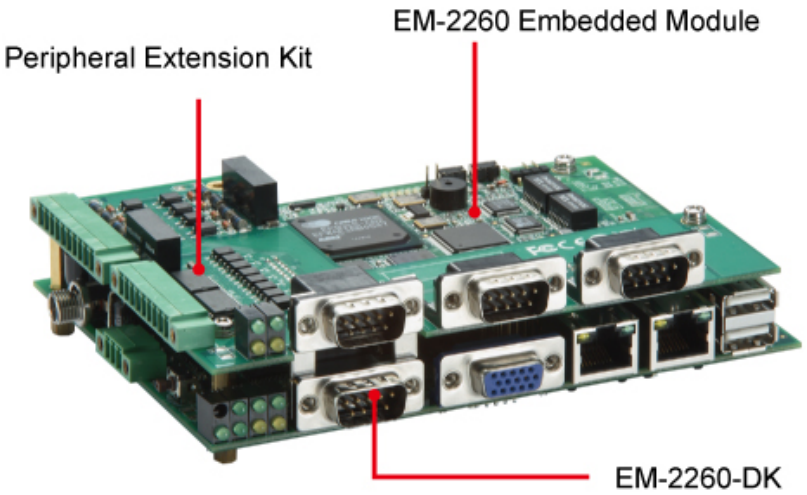
In addition to the standard model, the EM-2260 Embedded Module also comes in wide temperature model that offers the operating temperature range from -40 to 75°C, and is appropriate for harsh industrial automation environments.

The EM-2260 Development Kit, which is designed for system and software development at the system evaluation stage, is also available. The kit combines the EM-2260 and carrier board EM-2260-DK. It is convenient for users to evaluate the functionality of EM-2260, develop and integrate the specific systems on it in advance, enabling EM-2260 embedded module to be completely compatible with the industrial systems and applications.

Appearance

The EM-2260 Development Kit contains EM-2260 embedded module, carrier board (EM-2260-DK) and Peripheral Extension Board.

EM-2260 Development Kit

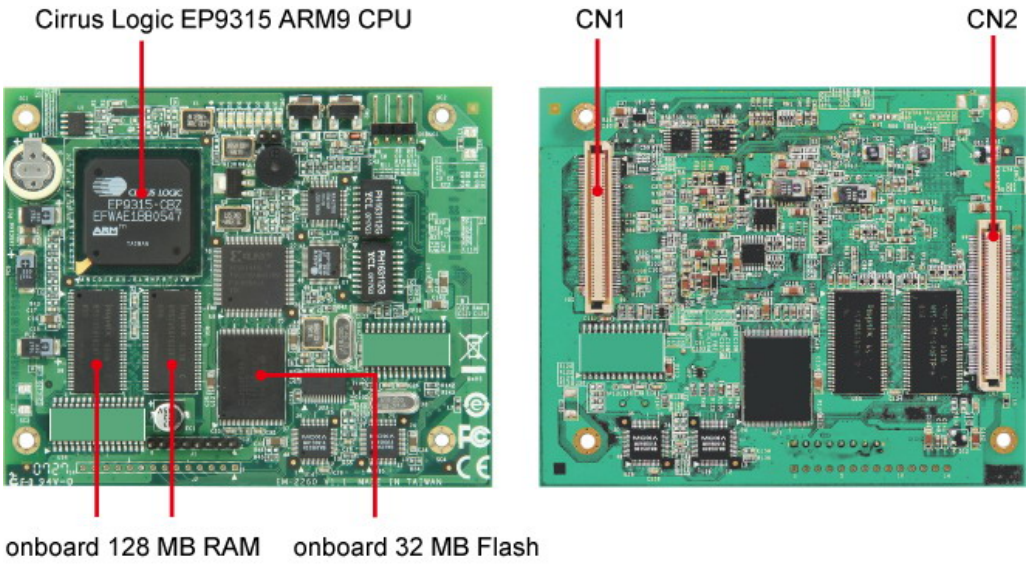


ATTENTION

The EM-2260 package includes the EM-2260 embedded module only. The EM-2260 Development Kit is available for evaluation purposes.

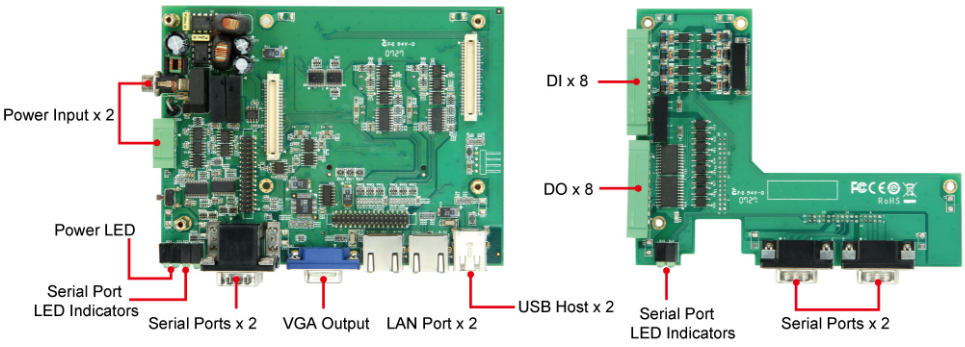
EM-2260 Embedded Module

Front View **Rear View**



EM-2260-DK Carrier Board and Peripheral Extension Board

EM-2260-DK **Peripheral Extension Board**



Package Checklist

The EM-2260 Development Kit contains the following items:

- EM-2260 Embedded Module
- EM-2260-DK, the carrier board of the EM-2260 Development Kit
- Peripheral Extension Board
- Quick Installation Guide
- Document & Software CD
- Cross-over Ethernet cable
- Universal Power Adapter
- Product Warranty Paper

ATTENTION

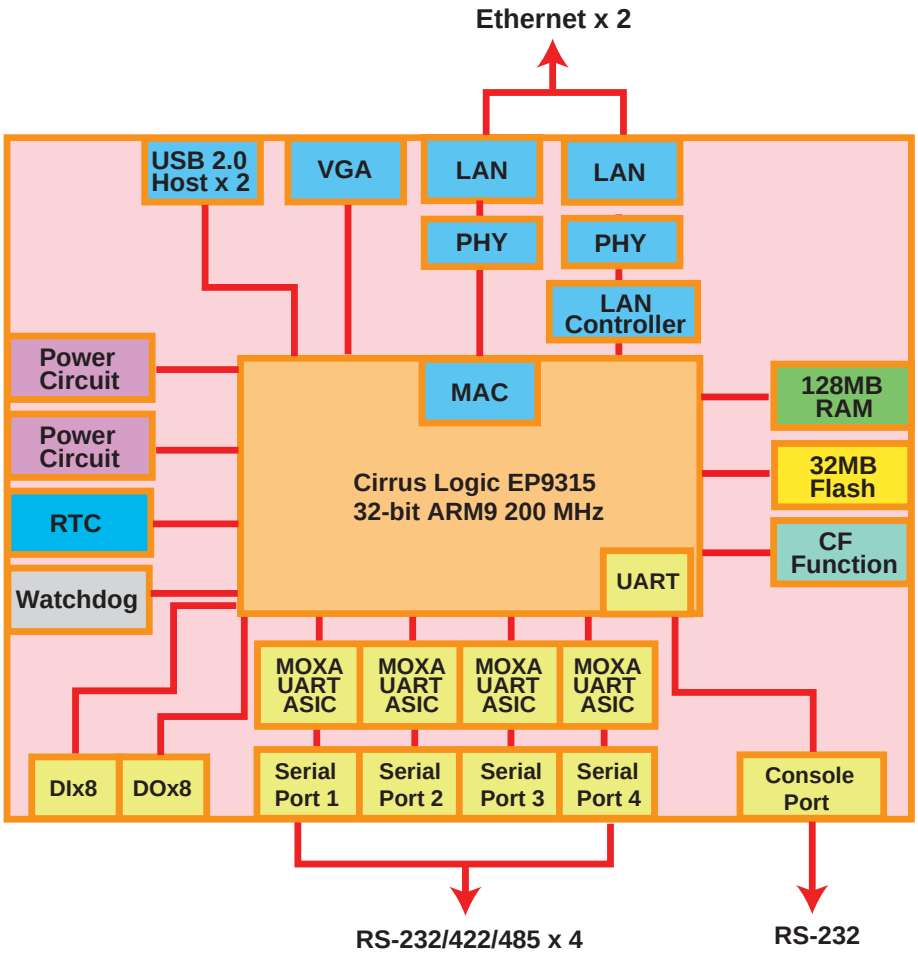
Notify your sales representative if any of the above items are missing or damaged.

Features

The EM-2260 Embedded Module/EM-2260 Development Kit has the following features:

- Cirrus Logic EP9315 ARM9 CPU, 200 MHz
- 128 MB RAM on-board, 32 MB Flash Disk
- Graphical interface for external VGA output connection
- 4 high speed TTL serial ports
- Dual 10/100 Mbps Ethernet for network redundancy
- 8+8 DI/DO
- Support EIDE interface and USB 2.0 Host
- Ready-to-Run WinCE 6.0 platform
- Full-function development kit for quick evaluation and application development
- –40 ~ 75°C wide temperature model is available

Hardware Block Diagram



ATTENTION

The dual Power Circuit, extra LAN controller and CF card socket are support only by EM-2260 Development Kit. EM-2260 embedded module connects to all the input/output peripherals through signals of two 100-pin connectors.

Hardware Specifications

EM-2260 embedded module supports all the peripherals through signals of two 100-pin connectors, CN1 and CN2. Differences of EM-2260 embedded module and EM-2260 Development Kit will be specially specified.

System	
CPU:	Cirrus Logic EP9315 ARM9 CPU, 200 MHz
DRAM:	128 MB onboard (optional 256 MB)
Flash:	32 MB Flash onboard
Storage Expansion:	
EM-2260:	EIDE Interface signals support up to 2 external devices connection
EM-2260 Development Kit:	CompactFlash socket x 1 for storage expansion
USB:	
EM-2260:	Signals support USB 2.0 Host (OHCI) x3
EM-2260 Development Kit:	USB 2.0 Host (OHCI) x 2, Type A connector
Console/Debugging Port:	RS-232 x 1 (TxD, RxD, GND), 4-pin header output
LED	
EM-2260 Development Kit:	System: Power x 1, Ready x 1, Storage x 1
	LAN: 10M/Link x 2 (on connector), 100M/Link x 2 (on connector)
	Serial: TxD x 4, RxD x 4
Others:	RTC, buzzer, Watchdog Timer, Reset button
Display	
Graphical Controller:	EP9315 internal graphics accelerator engine with TTL graphical signal support
Display Memory:	Dynamic video memory, share system memory
Graphical Resolution:	1024 x 768, 18-bit
Serial Communication	
Serial Port	
EM-2260:	Signals support High speed TTL serial port x 4
	(TxD, RxD, DTR, DSR, RTS, CTS, DCD, GND)
EM-2260 Development Kit:	RS-232/422/485 D-Sub male 9-pin connector x 4, software-selectable.
	RS-232 signals: TxD, RxD, DTR, DSR, RTS, CTS, DCD, GND
	RS-422 signals: TxD+, TxD-, RxD+, RxD-, GND
	4-wire RS-485 signals: TxD+, TxD-, RxD+, RxD-, GND
	2 -wire RS-485 signals: Data+, Data-, GND

Protection

EM-2260 Development Kit:	Built-in 15KV ESD protection for all signals, 2KV optical isolation protection
Data bits:	5, 6, 7, 8
Stop bits:	1, 1.5, 2
Parity:	None, Even, Odd, Space, Mark
Flow Control:	RTS/CTS, XON/XOFF, RS-485 ADDC™
Speed:	50 bps to 921.6 Kbps, support ANY BUAD RATE

Network Communication

LAN:	Auto-sensing 10/100Mbps x 2, RJ45
Protection:	Build-in 1.5KV magnetic isolation protection

Digital Input

Input Channels

EM-2260:	Signals of 8 input channels
EM-2260 Development Kit:	8, source type

Digital Input Levels

EM-2260:	3.3V, CMOS level
EM-2260 Development Kit:	Dry contact: Logic level 0 -- Close to GND, Logic level 1 – Open. Wet contact: Logic level 0 -- +3V max, Logic level 1: +10V ~ +30V (COM to DI)

Protection

EM-2260 Development Kit:	3KV optical isolation protection

Connector Type

EM-2260 Development Kit:	10 Pin Screw Terminal Block (8 points / COM / GND)

Digital Output

Input Channels

EM-2260:	Signals of 8 output channels
EM-2260 Development Kit:	8, sink type

Digital Output Levels

EM-2260:	3.3V, CMOS level
EM-2260 Development Kit:	On-state Voltage -- 24V DC nominal, open collector to 30 V Output Current Rating -- Max. 200mA per channel

Protection

EM-2260 Development Kit:	3KV optical isolation protection

Connector Type

EM-2260 Development Kit:	9-pin Screw Terminal Block

Power Requirments

Power Input

EM-2260:	+5V DC and +3.3V DC
EM-2260 Development Kit:	Dual power input design
	PWR1: 12 to 48V DC, power jack with thread
	PWR2: 12 to 48V DC, 3-pin terminal block

Power Consumption

EM-2260:	5.4 W
EM-2260 Development Kit:	783 mA @ 12V DC without loading of USB ports 1.2A @ 12V DC with loading of USB ports

Mechanical

Dimensions

EM-2260:	87 x 106 mm
EM-2260 Development Kit:	110 x 146 mm

Environmental

Operating Temperature:	-10 to 60°C (14 to 140°F) -40 to 75°C (-40 to 167°F) is optional for -T models
Storage Temperature:	-20 to 80°C (-4 to 176°F), 5 to 95% RH -40 to 85°C (-40 to 185°F) is optional for -T models

Regulatory Approvals and Warranty

EMC:	FCC, CE (Class A)
Others:	RoHS, WEEE
Warranty:	5 years

Software Specifications

Applications Development Environment

To make EM-2260 an easy-to-use programming environment, its Windows CE 6.0 environment provides the following common, popular application development features that make programming convenient and easy as in a PC environment.

- **C Libraries and Run-times** - Compared to the C libraries and run-times used on a desktop PC running Windows, the C libraries and run-times on a EM-2260 is a subset of the WIN32 APIs. It supports full ANSI C run time, standard input/output library, standard input/output ASCII library and standard ASCII string functions. In addition, it supports compiler C++ exception handling equivalent and Run-Time Type Information (RTTI) equivalent to the desktop C++ compilers.

- **Component Services (COM and DCOM)** - The Common Object Model (COM) is an operating system-independent, object-oriented system for creating binary software components that can interact with other COM-based components in the same process space, in other processes, or on remote machines.
- **SOAP Toolkit - SOAP is an XML** - based protocol for object exchange and remote procedure calls. Microsoft Windows CE 6.0 provides functionality similar to the SOAP Toolkit version 2 on the desktop. It provides a layer that allows COM objects to use SOAP as the transport protocol for remote procedure calls and to interact with Web services.
- **Microsoft .NET Compact Framework 2.0 with service pack 2** - It offers a choice of languages, initially Microsoft Visual Basic and Microsoft Visual C#, and eliminates the common problems faced with language interoperability.
- **XML** - Provides the Document Object Model (DOM) for base XML functionality, support for XML Query Language (XQL) and XPATH, Extensible Style Sheet Language Transformations (XSLT) that enables you to transform one class of XML document to another, SAX2 support for event-based parsing of XML documents and includes MSXML Writer, and parsing based on Simple API for XML (SAX) for resource-constrained target devices.
- **Winsock 2.2** - Provides enhanced capabilities over Winsock 1.1, including installable service providers for additional third-party protocols, as well as Media sense.

Networking and Communications Capabilities

For network centric embedded application usage, EM-2260, not only provides powerful communication hardware interfaces including dual Ethernet and 3-in-1 serial ports, but also supports the networking and communications capabilities that are built-in to Windows CE 6.0 OS. The features that are well supported are listed as below.

- **Simple Network Management Protocol (SNMP)** - Monitors remote connections to the network.
- **Simple Network Time Protocol (SNTP) Client** - Provides support for synchronizing the device's system time with a SNTP server, and supports Daylight Saving Time.
- **Serial Communications** - In addition to the 16550 UART driver bound to a debug port and the console port, it includes a special driver for 8 additional MOXA home-made serial ports.
- **Network Utilities (IpConfig, Ping, Route)** - Utilities for troubleshooting various network problems.

- **TCP/IP** - Includes IP, Address Resolution (ARP), Internet Control Message (ICMP), Internet Group Membership (IGMP), Transmission Control (TCP), User Datagram (UDP), name resolution and registration, and DHCP.

Supporting Servers and Daemons

In addition to the development and communication capability, EM-2260 embeds the services and daemons as stated next. These common and easy-to-use application servers help users to migrate the EM-2260 embedded computer to the industrial communication application very easily and conveniently.

- **Telnet Server** - A sample server that allows remote administration through a standard telnet client.
- **FTP Server** - A sample server used for transferring files to and from remote computer systems over a network using TCP/IP.
- **File Server** - The File Server functionality in Microsoft Windows CE enables clients to access files and other resources over the network.
- **Web Server (HTTPD)** - Includes ASP, ISAPI Secure Socket Layer support, SSL 2, SSL 3, and Transport Layer Security (TLS/SSL 3.1) public key-based protocols, and Web Administration ISAPI Extensions.
- **Dial-up Networking** - Consists of RAS client API and the Point to Point Protocol (PPP). RAS and PPP support Extensible Authentication Protocol (EAP) and RAS scripting.
- **Watchdog Service** – It's a CPU Hardware function for reset CPU in a user specified time interval. You must call the MOXA library function to trigger it.

Memory and File Systems

From the 128M bytes of SDRAM space, the main memory has a capacity of about 112M bytes in which the operating system and user applications run. The kernel image occupies the rest of the space.

The internal file system in the EM-2260 computer controls access to ROM and also provides file storage in the object store, which is in the RAM. The ROM file system provides persistent storage for applications and their related data even when the main power supply is lost. In the EM-2260 computer, a child directory named **"NORFlash"** under the root indicates the ROM storage of the flash memory of size 12M bytes.

The root directory is a RAM file system of size 50M bytes. You could adjust this size by using the **"Control Panel\system"**. It can be used for storing temporary files for your applications. However, do not place persistent files or applications in the root directory because they will be wiped out when the system is shutdown. Instead, place them under the directory **"NORFlash"**.

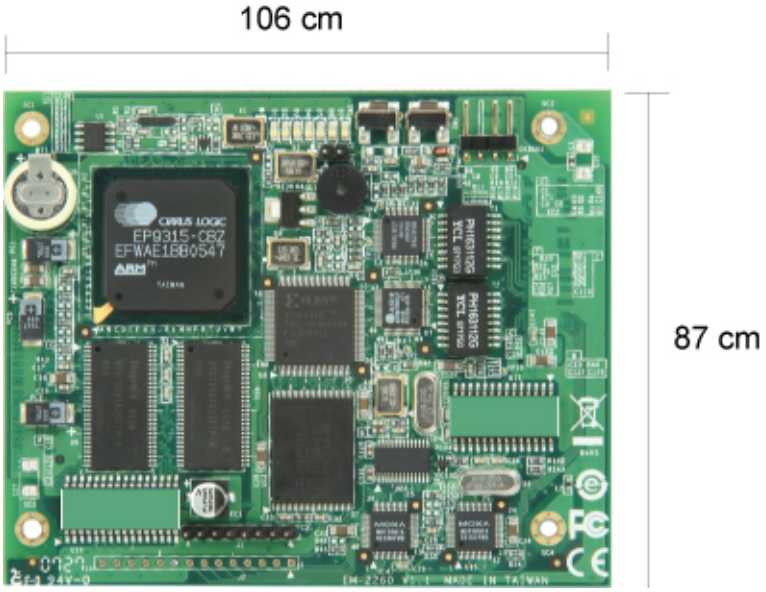
The additional file systems on USB and CompactFlash storage devices are placed at the root of the internal file system. If you intend to use these devices to port data between your PC and the EM-2260 computer, please format them as the FAT file system on your PC.

Hive-Based Registry—Contrast to RAM-Based Registry

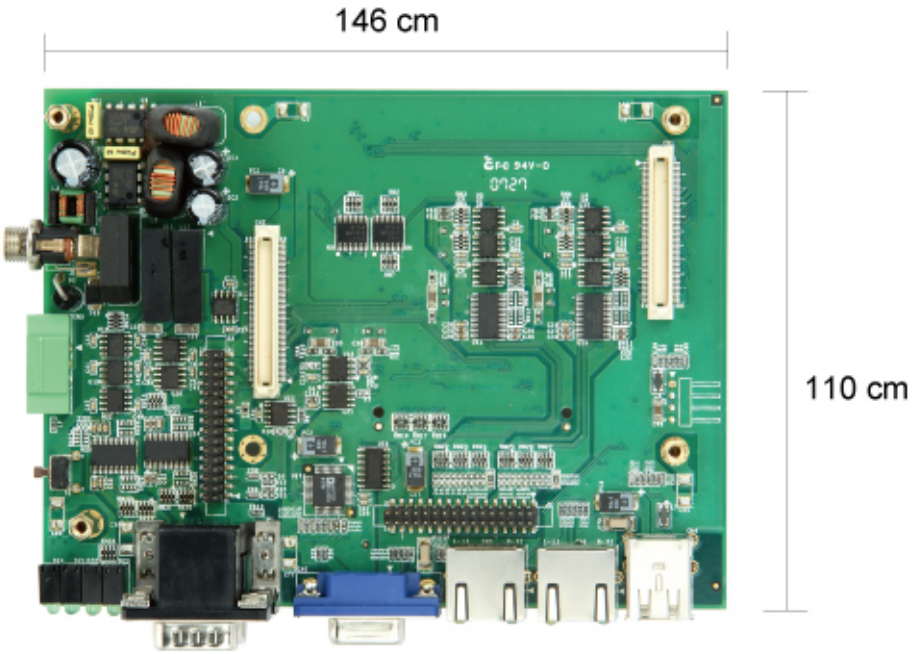
The registry for the EM-2260 is a hive-based registry in contrast to a RAM-based registry. The hive-based registry stores registry data inside files, or hives, which can be kept on any file system. This removes the need for performing backup and restore on power off.

Dimensions

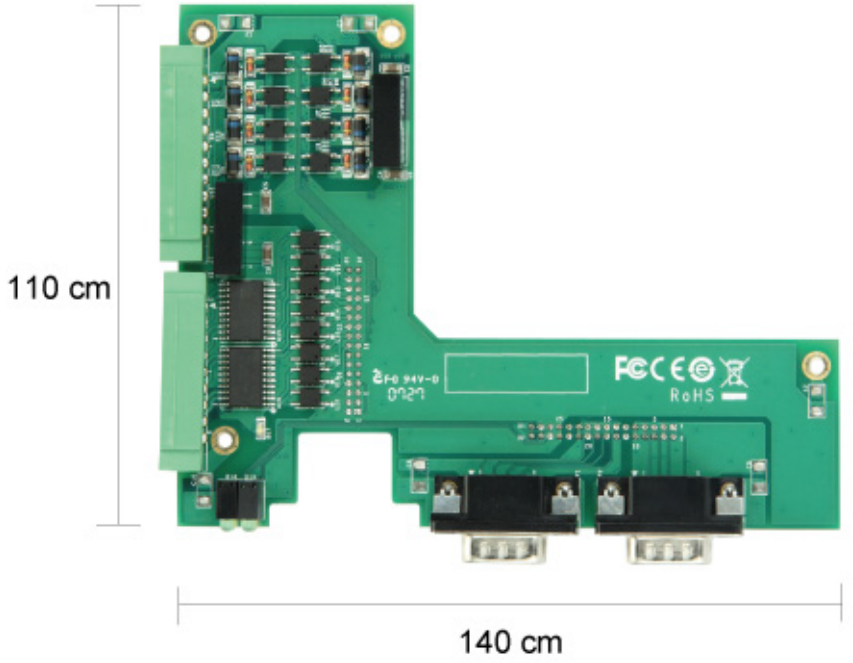
EM-2260 Embedded Module



EM-2260-DK Carrier Board



EM-2260 Peripheral Extension Board



2

Hardware Installation

The EM-2260 Embedded Module is designed to be integrated directly into the user's system and application. The pre-installed Windows CE 6.0 makes it easy for users to develop programs for a variety of applications. The EM-2260 Development Kit is a well-designed embedded computer with complete peripheral interfaces. This kit helps users to evaluate, develop, and integrate the EM-2260 Embedded Module into their systems and applications. Simply combine the EM-2260 Embedded Module with the Development Kit to start porting the relevant software, and create a solution for the applications you wish to implement.

The following topics are covered in this chapter:

- **Wiring Requirements**
- **Connecting the Power**
- **Resetting Your EM-2260 Computer**
- **LED Indicators**
- **Connecting to a Display**
- **Connecting Keyboard/Mouse and USB Mass Storage**
- **Serial Ports**
- **Insert CompactFlash Card**
- **LAN Ports**
- **Real Time Clock**
- **Connecting to the DI/DO**
- **Pin Assignments of CN1 and CN2**

Wiring Requirements

Please follow the following common safety precautions before proceeding with the installation of any electronic device:

- Use separate paths to route wiring for power and devices. If power wiring and device wiring paths must cross, make sure the wires are perpendicular at the intersection point.
- You can use the type of signal transmitted through a wire to determine which wires should be kept separate. The rule of thumb is that wiring that shares similar electrical characteristics can be bundled together.
- Keep input wiring and output wiring separate.
- When necessary, it is strongly advised that you label wiring to all devices in the system.

ATTENTION

Do not run signal or communication wiring and power wiring in the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.

ATTENTION

Safety First!
Be sure to disconnect the power cord before installing and/or wiring.

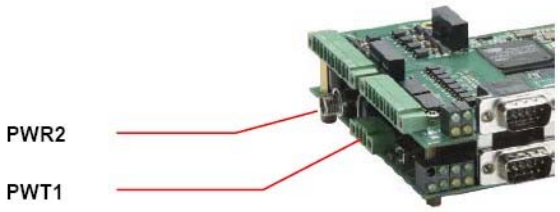
Electrical Current Caution!
Calculate the maximum possible current in each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size.

If the current goes above the maximum ratings, the wiring could overheat, causing serious damage to your equipment.

Temperature Caution!
Be careful when handling the unit. When the unit is plugged in, the internal components generate heat, and consequently the outer casing may feel hot to the touch.

Connecting the Power

EM-2260 Development Kit provides 2 kinds of power input, power jack and 3-pin terminal block, both of them allow 12 to 48V DC power input, and are able to work at the same time, providing redundant power solution. If the power is properly supplied, the Power LED will light up first, and then, it takes about **30 to 60 seconds** for the operating system to boot up. Once the system is ready, the Ready LED will light up.



The Shielded Ground (**SG**, sometimes called Protected Ground) helps to limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface prior to connecting devices.

ATTENTION

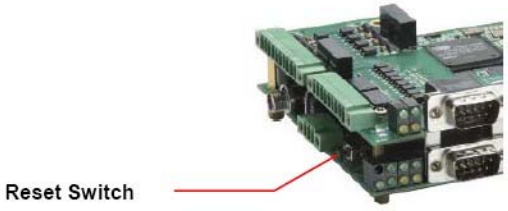
The power for this product is intended to be supplied by a Listed Power Supply Unit, and rated to deliver 12 to 48V DC at a minimum of 1200mA for 12V DC, 260mA for 48V DC.

Resetting Your EM-2260 Computer

Cold-Start: Disconnect power and then connect the power again. The computer reboots itself right away.

Warm-Start: In power-on state, push the Reset Switch near power terminal block and release it in 1 second. The computer reboots itself.

Reset to Factory Default: If the computer is not working properly, and you want to load factory default settings. Press the Reset Switch for at least 5 seconds. After the factory default configuration has been loaded, the system will reboot automatically.

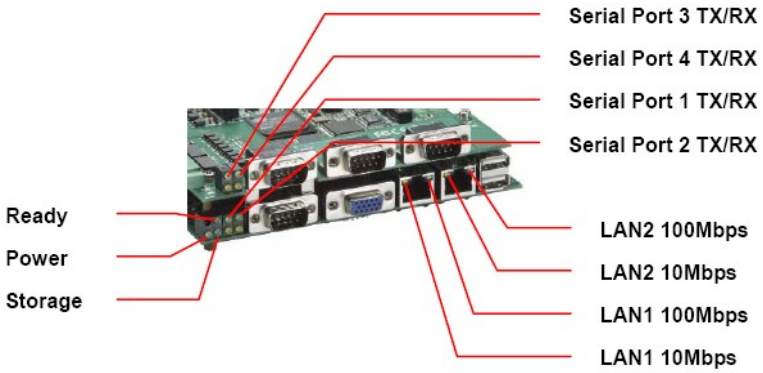


WARNING

Reset to Default preserves user's data. It will NOT format the user directory and erase the user's data, pressing the Reset to Default will only load the configuration file. If the computer cannot start up, please use Console Port and go to the Boot Loader to format the file system. After the formatting procedure is done, you should be able to restart it.

LED Indicators

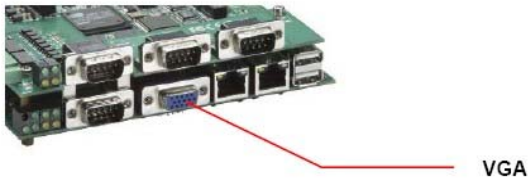
EM-2260 Development Kit has 15 LED indicators on the front. Refer to the following table for information about each LED.

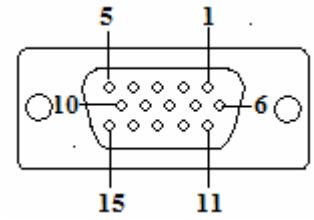


LED	Color	Description
Power	Green	Power is ON.
	Off	No power is being received, or power error exists.
Ready	Green	OS is ready and functioning normally (after booting up).
	Off	OS is not ready.
Storage	Green	Data is being written to or read from the storage unit.
	Off	Storage unit is idle.
LAN1, LAN2	Orange	10 Mbps Ethernet connection
	Green	100 Mbps Ethernet connection
P1-P4 (TX)	Green	Serial port is transmitting TX data to the serial device.
	Off	Serial port is not transmitting TX data to the serial device.
P1-P4 (RX)	Orange	Serial port is receiving RX data from the serial device.
	Off	Serial port is not receiving RX data to the serial device.

Connecting to a Display

EM-2260 Development Kit comes with a D-Sub 15-pin female connector to connect to VGA monitor. Be sure to remove power before you connect or disconnect the monitor cable.



DB15 Female Connector	Pin No.	Signal Definition
	1	Red
	2	Green
	3	Blue
	4	---
	5	GND
	6	GND
	7	GND
	8	GND
	9	---
	10	GND
	11	---
	12	---
	13	H-Sync
	14	V-Sync
	15	---

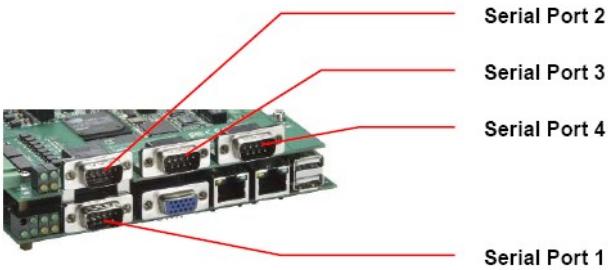
Connecting Keyboard/Mouse and USB Mass Storage

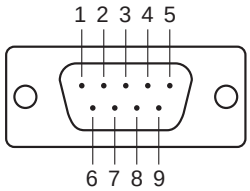
The EM-2260 Development Kit provides 2 USB 2.0 full speed hosts (OHCI), type A connector, which support not only keyboard or mouse, but also the ability to connect a flash disk for storing large amounts of data.

When an empty USB storage device is plugged into the USB ports of the EM-2260 Development Kit, the computer automatically formats it to the FAT system. A directory named **"USBDisk"** under the root directory is created as a link to the first USB mass storage device that is plugged-in. The directory created for the second plugged-in USB device is **"USBDisk2"**.

Serial Ports

EM-2260 Development Kit offers 4 software-selectable serial ports. Each port can be configured by software for RS-232, RS-422, or RS-485. The pin assignments for the ports are shown in the following table:





Pin	RS-232	RS-422	RS-485 (4-wire)	RS-485 (2-wire)
1	DCD	TxDA(-)	TxDA(-)	---
2	RxD	TxDB(+)	TxDB(+)	---
3	TxD	RxDB(+)	RxDB(+)	DataB(+)
4	DTR	RxDA(-)	RxDA(-)	DataA(-)
5	GND	GND	GND	GND
6	DSR	---	---	---
7	RTS	---	---	---
8	CTS	---	---	---

Insert CompactFlash Card

EM-2260 Development Kit comes with a CompactFlash socket. A mass storage card is considered to be a standard attachment to the computer. Thus, when an empty mass storage card is inserted into the slot, the computer automatically formats it to the FAT system. This process takes a few minutes to complete. The EM-2260, when a mass storage card is inserted, creates a directory named **"HardDisk"** under the root directory and the newly created directory serves a link to the storage.

There are some CompactFlash storage disks which are not compatible with EM-2260. You could try the other CompactFlash storage or disable ultra DMA by using the "System Manager" to change this setting.

The following table describes the compatible CompactFlash storages list that we had tested successfully.

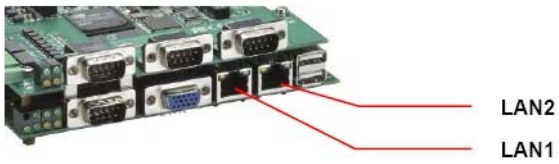
Vendor	Device Name	Size
ScanDisk	Ultra II	1GB
Transcend	Compact Flash 80X	512MB
Apacer	Photo CIENO	2GB
Unigen	Compact Flash card	128MB

ATTENTION

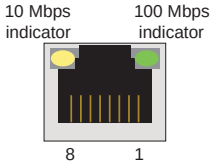
The EM-2260 does not support CompactFlash hot swap and PnP (Plug and Play) function. It is necessary to remove power source first before inserting or removing the CompactFlash card.

LAN Ports

EM-2260 Development Kit Embedded Module offers 2 LAN ports supporting 10/100 Mbps. The default IP addresses and netmasks of the network interfaces are as follows:



8-pin RJ 45



Pinouts

Pin	Signal
1	ETx+
2	ETx-
3	ERx+
4	---
5	---
6	ERx-
7	---
8	---

	Default IP Address	Netmask
LAN 1	192.168.3.127	255.255.255.0
LAN 2	192.168.4.127	255.255.255.0

Real Time Clock

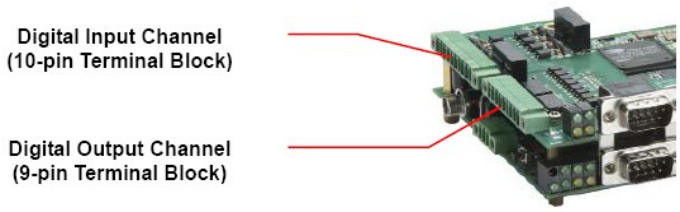
The EM-2260's real time clock is powered by a lithium battery. We strongly recommend that you do not replace the lithium battery without help from a qualified MOXA support engineer. If you need to change the battery, contact the MOXA RMA service team.

WARNING

There is a risk of explosion if the battery is replaced by an incorrect type

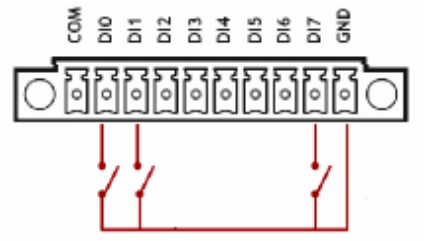
Connecting to the DI/DO

The EM-2260 Development Kit has 8 digital inputs and 8 digital outputs, both of them support 3KV optical isolation protection. The pinouts for the I/O are shown below.

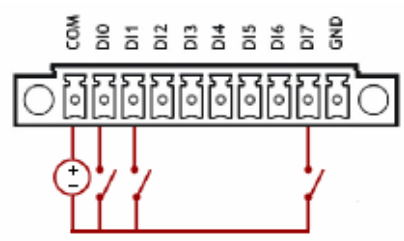


Digital Input Wiring

Dry Contact



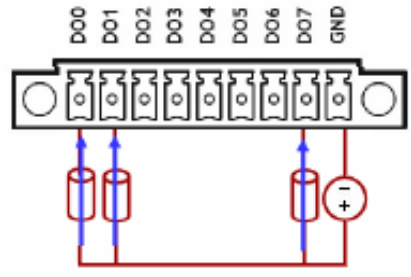
Wet Contact



WARNING

If you are using wet contacts, you must supply power to "COM".

Digital Output Wiring



Pin Assignments of CN1 and CN2

There are two 100-pin connectors on the rear of EM-2260 embedded module, to independently use EM-2260 Embedded Module for developing your own system, please refer to the following tables for the pin assignments of CN1 and CN2.

CN1 Pin Assignment

CN1 Signals	Pin	Pin	CN1 Signals
NC	2	1	XP
EGPIO9	4	3	XM
UR1_232EN	6	5	YP
UR1_TENA	8	7	YM
UR1_TENB	10	9	SXP
UR1_REN	12	11	SXM
UR1_RTS	14	13	SYP
UR1_DTR	16	15	SYM
UR1_TXD	18	17	GND
UR1_RXD	20	19	USB_P0
UR1_CTS	22	21	USB_M0
UR1_DCD	24	23	GND
UR1_DSR	26	25	USB_P1
UR2_232EN	28	27	USB_M1
UR2_TENA	30	29	GND
UR2_TENB	32	31	USB_P2
UR2_REN	34	33	USB_M2
UR2_RTS	36	35	GND
UR2_DTR	38	37	CPU_TXD0
UR2_TXD	40	39	CPU_RXD0
UR2_RXD	42	41	CPU_CTS#
UR2_CTS	44	43	CPU_RTS#
UR2_DCD	46	45	CPU_DTR#
UR2_DSR	48	47	CPU_DSR#
UR3_232EN	50	49	ARST#

CN1 Pin Assignment (Continue)

CN1 Signals	Pin	Pin	CN1 Signals
UR3_TENA	52	51	ABITCLK
UR3_TENB	54	53	ASYNC
UR3_REN	56	55	ASDI
UR3_RTS	58	57	ASDO
UR3_DTR	60	59	GND
UR3_TXD	62	61	TX1+
UR3_RXD	64	63	TX1-
UR3_CTS	66	65	GND
UR3_DCD	68	67	RX1+
UR3_DSR	70	69	RX1-
UR4_232EN	72	71	GND
UR4_TENA	74	73	TX2+
UR4_TENB	76	75	TX2-
UR4_REN	78	77	GND
UR4_RTS	80	79	RX2+
UR4_DTR	82	81	RX2-
UR4_TXD	84	83	GND
UR4_RXD	86	85	CAN_TX0
UR4_CTS	88	87	GND
UR4_DCD	90	89	CAN_TX1
UR4_DSR	92	91	GND
+5V	94	93	CAN_RX0
+5V	96	95	GND
+5V	98	97	CAN_RX1
+5V	100	99	+5V

CN2 Pin Assignment

CN2 Signals	Pin	Pin	CN2 Signals
DIN0	2	1	DD0
DIN1	4	3	DD1
DIN2	6	5	DD2
DIN3	8	7	DD3
DIN4	10	9	DD4
DIN5	12	11	DD5
DIN6	14	13	DD6
DIN7	16	15	DD7
DOUT0	18	17	DD8
DOUT1	20	19	DD9
DOUT2	22	21	DD10
DOUT3	24	23	DD11
DOUT4	26	25	DD12
DOUT5	28	27	DD13
DOUT6	30	29	DD14
DOUT7	32	31	DD15

BRIGHT	34	33	IDE_CS#1
LCD_P0	36	35	IDE_CS#3
LCD_P1	38	37	IDE_A0
LCD_P2	40	39	IDE_A1
LCD_P3	42	41	IDE_A2
LCD_P4	44	43	INT3_CF
LCD_P5	46	45	IDE_DREQ
LCD_P6	48	47	IORDY
LCD_P7	50	49	DMACK#

CN2 Pin Assignment (Continue)

CN2 Signals	Pin	Pin	CN2 Signals
LCD_P8	52	51	DIOW#
LCD_P9	54	53	DIOR#
LCD_P10	56	55	GND
LCD_P11	58	57	ROW0
LCD_P12	60	59	ROW1
LCD_P13	62	61	ROW2
LCD_P14	64	63	ROW3
LCD_P15	66	65	ROW4
LCD_P16	68	67	ROW5
LCD_P17	70	69	ROW6
SPCLK	72	71	ROW7
BLANK	74	73	COL0
HSYNC	76	75	COL1
VSYNC	78	77	COL2
P1_10_ACT	80	79	COL3
P1_100_ACT	82	81	COL4
P2_LINK	84	83	COL5
P2_100_ACT	86	85	COL6
SW_RELOAD	88	87	COL7
RESET#-1	90	89	+3.3V
P1_LINK	92	91	+3.3V
SW_READY	94	93	+3.3V
+3.3V	96	95	+3.3V
+3.3V	98	97	+3.3V
+3.3V	100	99	+3.3V

3

Software Configuration

This chapter describes basic system management utilities, such as system information, processes monitoring, serial port configuration, network and date/time setting. Some of these operations can be done via system utilities/commands after gaining access to the computer.

The following topics are covered in this chapter:

- **System Manager Utility**
- **Changing the Network Settings**
- **Operating Your EM-2260 Computer via Telnet Client**
- **User/Group Management**
- **Adjusting Time Zone**
- **Adjusting System Time**
- **Starting and Stopping Services**
- **Troubleshooting Network Connectivity**
- **Simple Network Management Protocol (SNMP)**
  - SNMP Manager
- **Web Server Configuration**

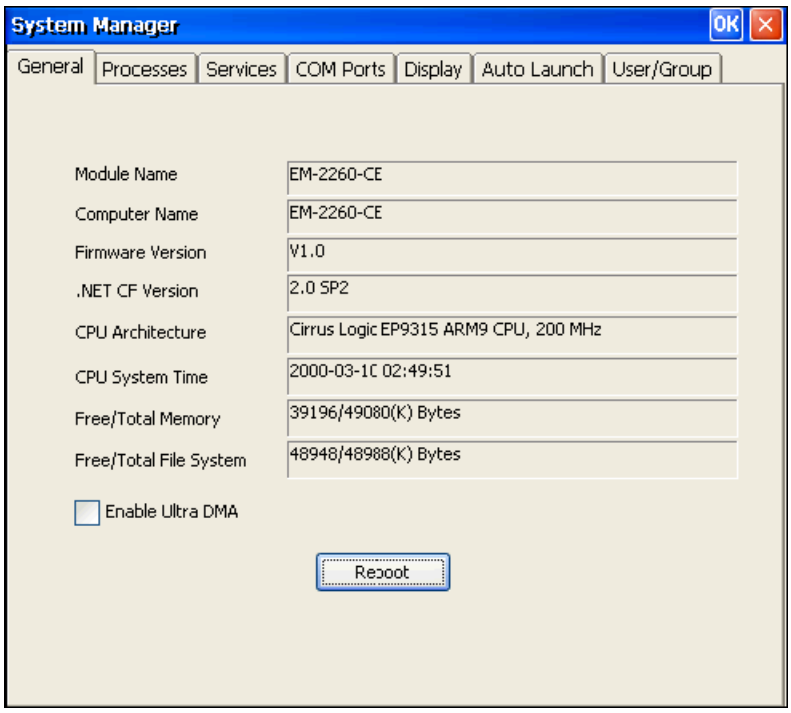
System Manager Utility

To resolve management issues, a user friendly management system is installed into the EM-2260 computer. Before operating this utility, please make sure you have a display monitor connected to your EM-2260 embedded computer. Then, double-click the desktop icon **[System Manager]**.

System Information

The first page displays the system information of the EM-2260 computer, including the firmware version of the computer, .Net CF version, the system time, and system resources including main memory and file system usage.

In this page user can click on the **"Enable Ultra DMA"** check box to enable or disable Ultra DMA for CF card. If system can not detect some CF cards please disable this setting.

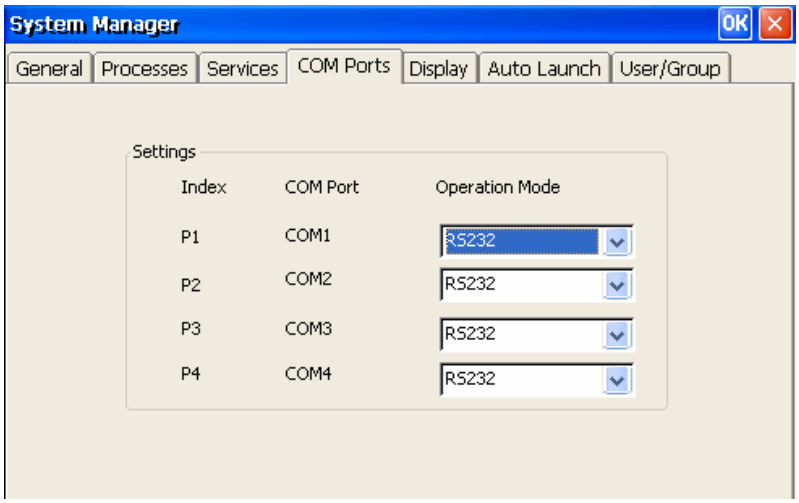


ATTENTION

You must restart (reboot) the system to make the setting takes effect.

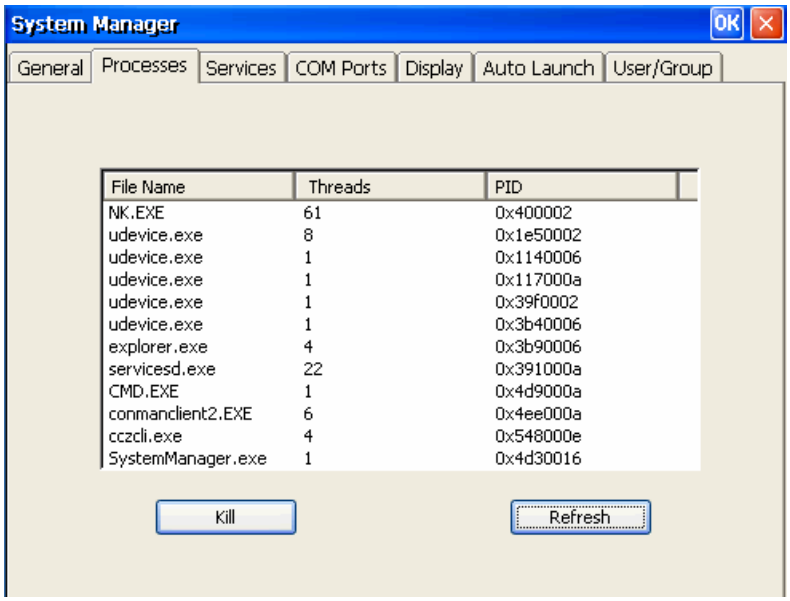
Serial Port Configuration

The EM-2260 contains 4 high-performance serial ports. When the system starts up you can specify the default operation mode (RS-232, 422 or 485). The factory default mode would be RS-232.



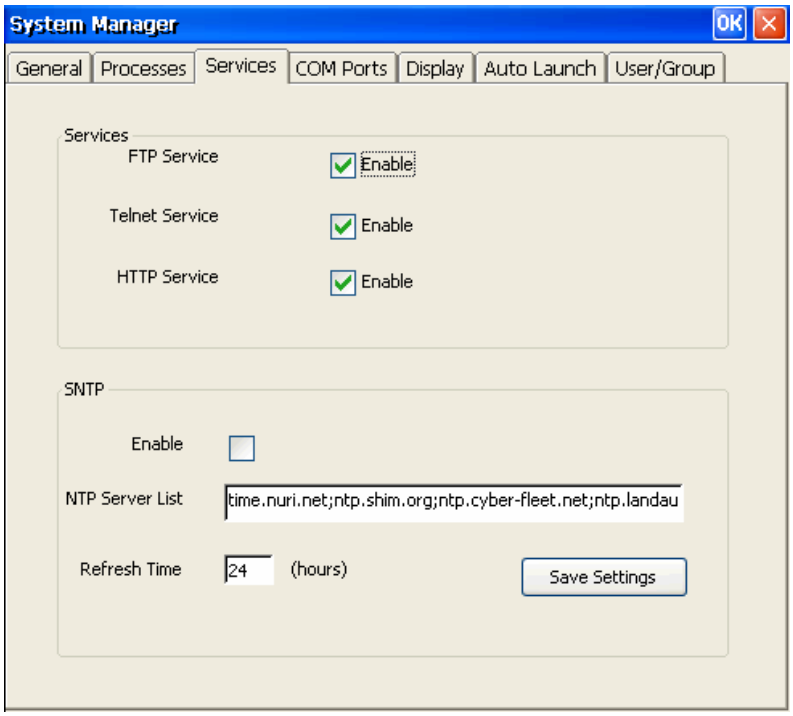
Process (Thread) Monitoring/Control

You can use the management system to monitor and control Processes or Threads. To view current processes, please click the **"Processes"** item on the tab bar. The running processes are then displayed. You can kill a process by clicking the **"kill"** button.



Services Monitoring/Control

Some services run on the background, such as FTP, Telnet and HTTP, you can click on a check box to toggle a start/stop operation for a service.

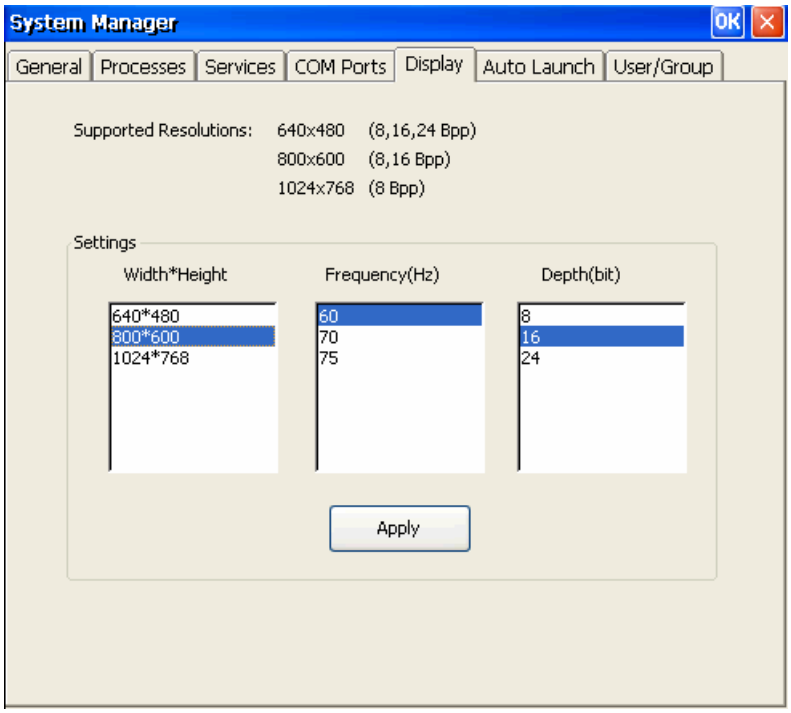


You can also adjust the time automatically by using SNTP. Click on the check box to enable the service and click the button to activate.

Some listed services cannot be stopped in order to maintain normal operation of the computer. Such services do not have a check box next to them.

Display

The EM-2260 VGA output works through DB15 Female connector to display the Windows CE desktop into a LCD monitor or a CRT monitor. The default setting is "800x600", 16 bit and 60Hz. You should tune the setting to match your monitor's specification. In the Display setting window you can adjust the setting and press **"Apply"** to save the setting.



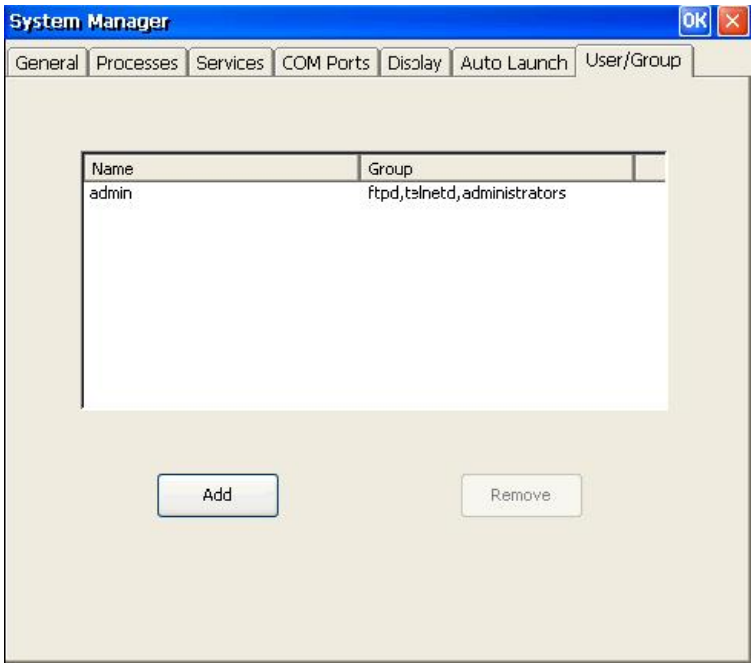
ATTENTION

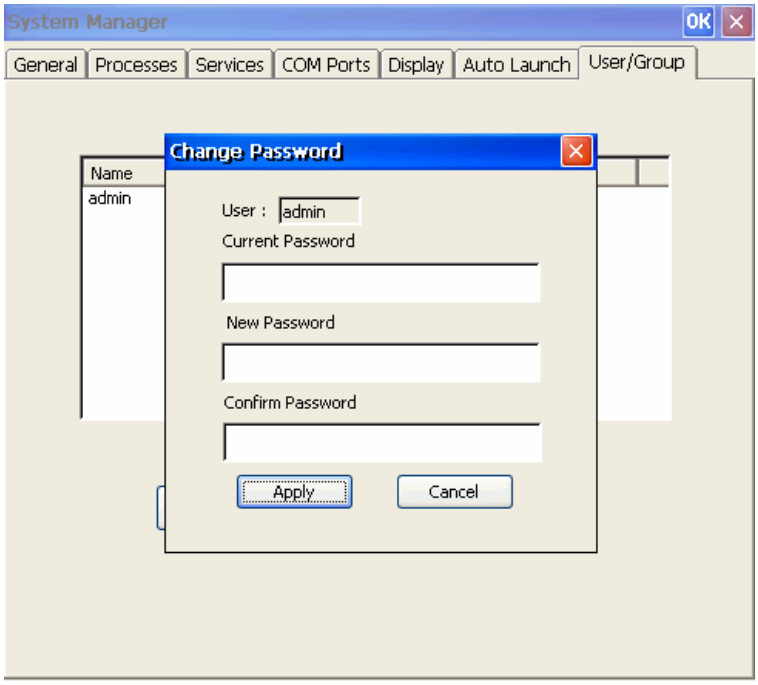
You must restart (reboot) the system to make the setting takes effect.

User/Group Management

You can add users by click the **"Add"** button to assign specific services, such as ftp and telnet, to define user groups such that these services are accessible and remove users by click the **"Remove"** button.

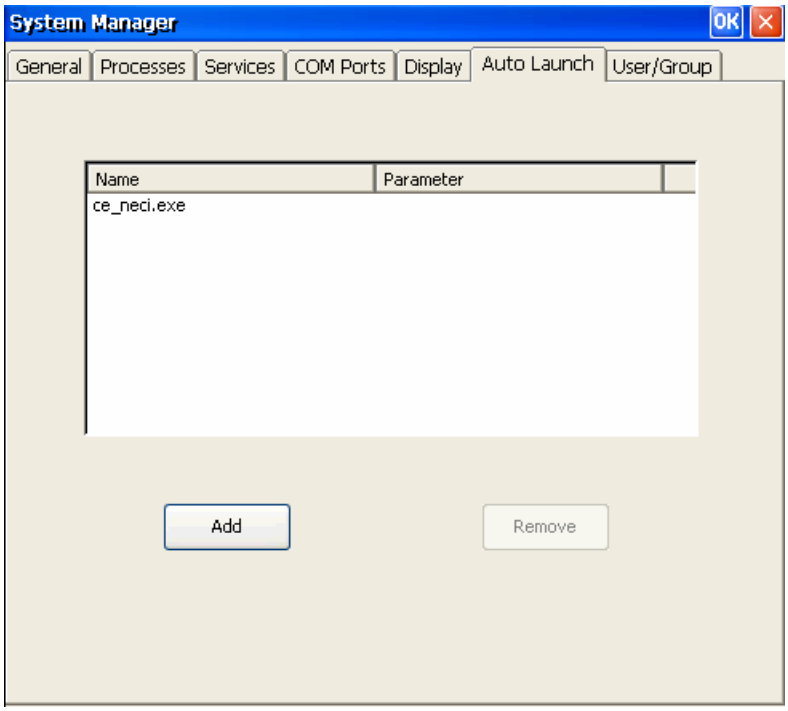
User can change login Password by click expectative name twice.


System Manager
OK
General
Processes
Services
COM Ports
Display
Auto Launch
User/Group
Name
Group
admin
ftpd,telnetd,administrators
Add
Remove


System Manager
OK
General
Processes
Services
COM Ports
Display
Auto Launch
User/Group
Name
admin
Change Password
User :
admin
Current Password
New Password
Confirm Password
Apply
Cancel

Auto Launch Configuration

You can specify programs to execute automatically after booting up. Click **"Add"** button to add the program and restart EM-2260 to execute these programs.

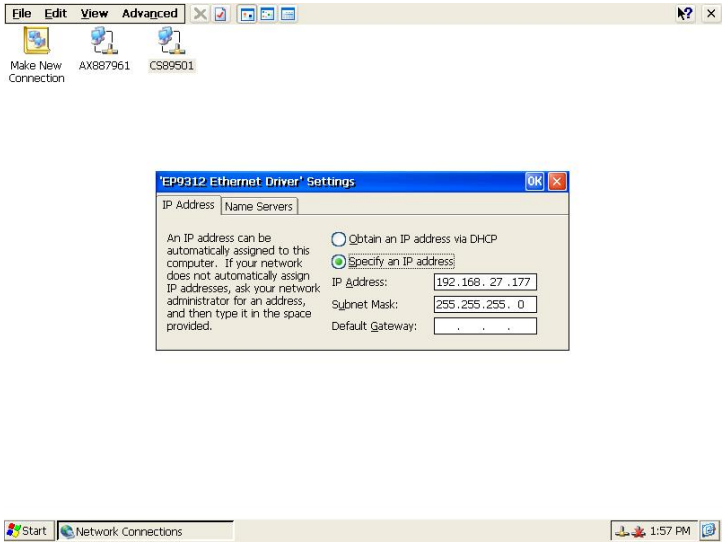


Changing the Network Settings

You can use Windows CE Network Control Panel to change Network Settings.

1. Move you mouse, go to the **[Start]** → **[Settings]** → **[Network and Dial-Up Connections]**.
2. Right-Click the **LAN** icon and click the **[property]**

3. Click **"OK"** button after configuration is done.


File Edit View Advanced
Make New Connection
AX887961
CS89501
'EP9312 Ethernet Driver' Settings
OK
IP Address
Name Servers
An IP address can be automatically assigned to this computer. If your network does not automatically assign IP addresses, ask your network administrator for an address, and then type it in the space provided.
Obtain an IP address via DHCP
Specify an IP address
IP Address: 192.168. 27 .177
Subnet Mask: 255.255.255. 0
Default Gateway:
Start
Network Connections
1:57 PM

Operating Your EM-2260 Computer via Telnet Client

Before operating your EM-2260 computer using the Telnet client, we suggest that you change the network settings of the computer (see the earlier section) to have at least one of the two network ports situated in the same LAN as your development workstation.

Use a cross-over Ethernet cable to directly connect your development workstation to the target computer, or a straight-through Ethernet cable to connect the computer to a LAN hub or switch.

Next, use a telnet client in your development workstation to connect to the telnet console utility of the target computer. Upon a successful connection, type the login name and password as requested to logon to the computer.

After logging in via the console port or a telnet client, you have a list of busybox commands available to operate the computer. Use ***HELP*** to display all the commands, or type ***HELP [command name]*** to display extended help for the selected command. Some of these commands such as ***DATE*** and ***TIME*** are very useful to you to easily manage the system time of the computer. Other commands such as ***DIR*** and ***MKDIR*** are good utilities for file management. For example, to inspect the file structure of the root directory, type ***DIR***

```
\> dir /b
NORFlash
My Documents
Program Files
Temp
Windows
```

User/Group Management

User Group: You should assign specific services, such as ftp and telnet, to defined user groups such that these services are accessible only by the users within the permissible user group. Three user groups, namely "ftpd", "telnetd", and "httpd", are already created by default for your convenience.

Adding a Group: Use the command ***useradd –g <groupName>*** to create a user group.

```
\> useradd –g yyyy
group yyyy has been added.
```

Deleting a Group: To remove a group, use the command ***userdel –g <groupName>***.

```
\> userdel –g yyyy
group yyyy has been removed.
```

Adding a User: Use the command ***useradd <newUserID>*** to add a user for accessing the system. The user's password, by default, is the same as the user name.

```
\> useradd xxxx
user xxxx has been added.
```

In addition, you can permit this user to access a particular service by typing -g followed by the user group name of the service, i.e., ***useradd –g <groupName> <newUserID>***. For example,

```
\> useradd –g telnetd xxxx
user xxxx is existent
group telnetd is existent
user xxxx has been added to group telnetd
```

Deleting a User: Use the command ***userdel <userID>*** to delete a user from the system. User "admin" **CANNOT** be deleted.

```
\> userdel xxxx
user xxxx has been deleted
```

You can also remove a user from a user group by using the command ***userdel –g***

<groupName> <newUserID>. For example,

```
\> userdel –g telnetd xxxx
user xxxx has been removed from group telnetd
```

Changing the Password: Please use **"System Manager"** to change the Password.

Adjusting Time Zone

Windows CE 6.0 supports Time Zone. You can use **[Control Panel]→[Date/Time]** to adjust your current Time Zone. It also supports **Daylight Date** and **Daylight Time**.

Adjusting System Time

Setting the System Time Manually: Use the ***date***, and ***time*** commands to query the current system date/time or to set a new system date/time.

```
\> date
The current date is: Tuesday, November 22, 2005
Enter the new date (mm-dd-[yy]yy): 12-23-05

\> date /T
Wednesday, November 23, 2005

\> time
The current time is: 5:27:17 PM
Enter the new time (hh:mm:ss): 16:02:00

\> time /T
4:02:04 PM
```

The Date/Time setting will be saved into EM-2260 RTC, which is powered by battery.

Starting and Stopping Services

After booting up, the EM-2260 computer runs several services continuously to serve requests from users or other programs. Notable services include telnet ("TEL0:"), console ("CON0:"), world wide web HTTP ("HTP0:"), file transfer FTP ("FTP0:") etc. You seldom need to care about these services. However, you still can start up or stop a service with its associated name by using the command "services". For example,

Start the FTP service by

```
\> services start FTP0:
```

Stop the FTP service by

```
\> services stop FTP0:
```

The default services in EM-2260 are listed as below:

TEL0: Telnet Service

FTP0: FTP Service

CON0: Console Service

Troubleshooting Network Connectivity

The ipconfig tool prints the TCP/IP-related configuration data of a host including the IP addresses, gateway and DNS servers.

```
\> ipconfig /all
Windows IP configuration
Ethernet adapter Local Area Connection:
IP Address: 192.168.3.127
Subnet Mask: 255.255.255.0
Adapter Name: AX887961
```

```
Description: AX887961
Adapter Index: 2
Address: 00 90 e8 00 00 40
DHCP Enabled: NO
Ethernet adapter Local Area Connection:
IP Address: 192.168.4.127
Subnet Mask: 255.255.255.0
Default Gateway: 192.168.15.254
Adapter Name: CS89501
Description: CS89501
Adapter Index: 3
Address: 00 90 e8 00 00 50
DHCP Enabled: NO

Host name: EM-2260
Domain Name:
NODETYPE: 8
Routing Enabled: NO
Proxy Enabled: NO
```

To troubleshoot network connectivity, reachability, and name resolution, use the ping command. This command verifies IP-level connectivity to another TCP/IP computer by sending Internet Control Message Protocol (ICMP) Echo Request messages. The corresponding return Echo Reply messages are displayed, along with round-trip times. For more information, type ping without parameters.

```
\> ping www.moxa.com
Pinging Host www.moxa.com [192.168.1.16]
Reply from 192.168.1.16: Echo size=32 time<1ms TTL=126
Reply from 192.168.1.16: Echo size=32 time<1ms TTL=126
Reply from 192.168.1.16: Echo size=32 time<1ms TTL=126
```

The route utility allows you to view or modify network routing tables. Type this command without parameters to view a list of functions.

```
\> route
```

To view current routing items in the tables,

```
\> route PRINT
```

To add a routing item on network interface 1,

```
\> route ADD 192.168.0.0 MASK 255.255.0.0 192.168.15.254 IF 2
```

To delete a routing item,

```
\> route DELETE 192.168.0.0
```

Simple Network Management Protocol (SNMP)

SNMP is the Internet Standard protocol for network management and part of the TCP/IP protocol suite. SNMP was developed to monitor and manage networks. It uses a distributed architecture that consists of agents and managers:

SNMP Agent

The SNMP agent is an SNMP application that monitors network traffic and responds to queries from SNMP manager applications. The agent also notifies the manager, by sending a trap, when significant events occur.

SNMP Manager

An SNMP manager is an SNMP application that generates queries to SNMP agent applications and receives traps from SNMP agent applications.

The EM-2260 computer installs an SNMP agent to serve as an SNMP device. You should install the SNMP manager on the workstation computer (for example, a Linux system) that monitors the network. After installing the nodes, you need to configure the SNMP manager and agent.

To check SNMP agent capabilities in a target EM-2260 computer (e.g, network IP at 192.168.3.127), please logon the workstation computer that, for example, a Linux-based computer, the SNMP manager resides and type

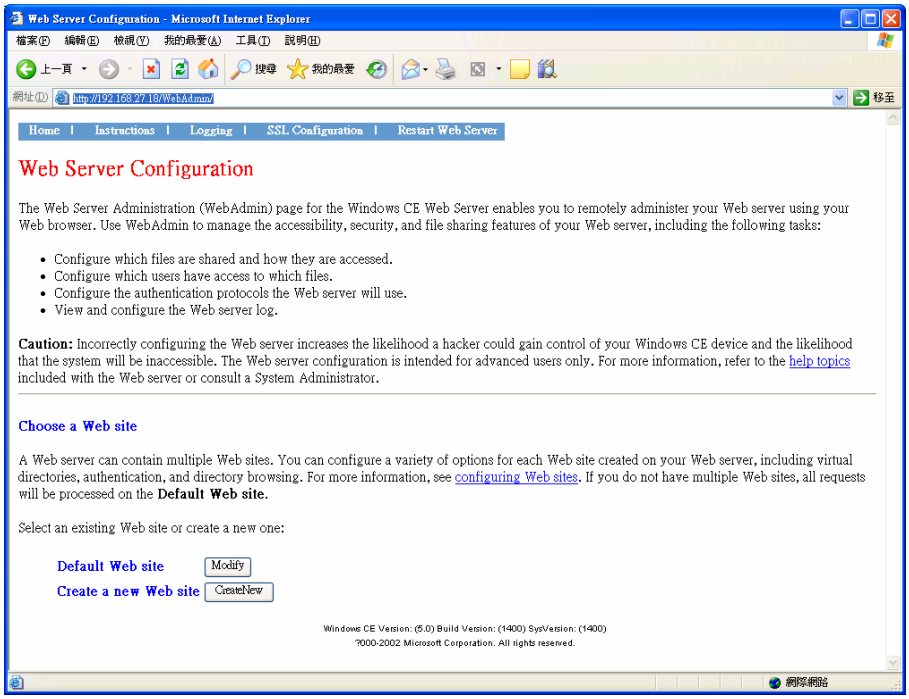
```
\> snmpwalk -v 2c -c public 192.168.3.127 system
SNMPv2-MIB::sysDescr.0 Microsoft Windows CE Version 6.0 (Build 1400)
SNMPv2-MIB::sysObjectID.0
SNMPv2-SMI::enterprises.8691.13.7420
SNMPv2-MIB::sysUpTime.0 1282929
SNMPv2-MIB::sysContact.0 Your System Contact Here
SNMPv2-MIB::sysName.0 WindowsCE
```

You will see a series of messages from the SNMP agent in the EM-2260 computer. From there, you can monitor and manage the computer.

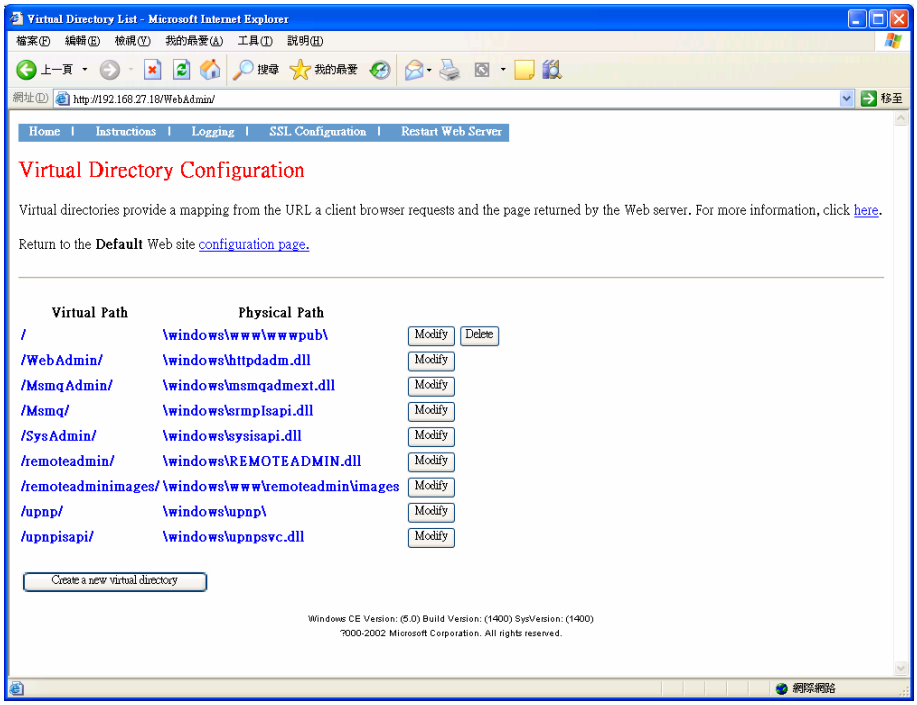
Web Server Configuration

You need a Windows 2000 or Windows XP for Web administration. Try to open a "IE" and go to URL http://192.168.3.127/WebAdmin (e.g. the EM-2260 network IP address is 192.168.3.127).

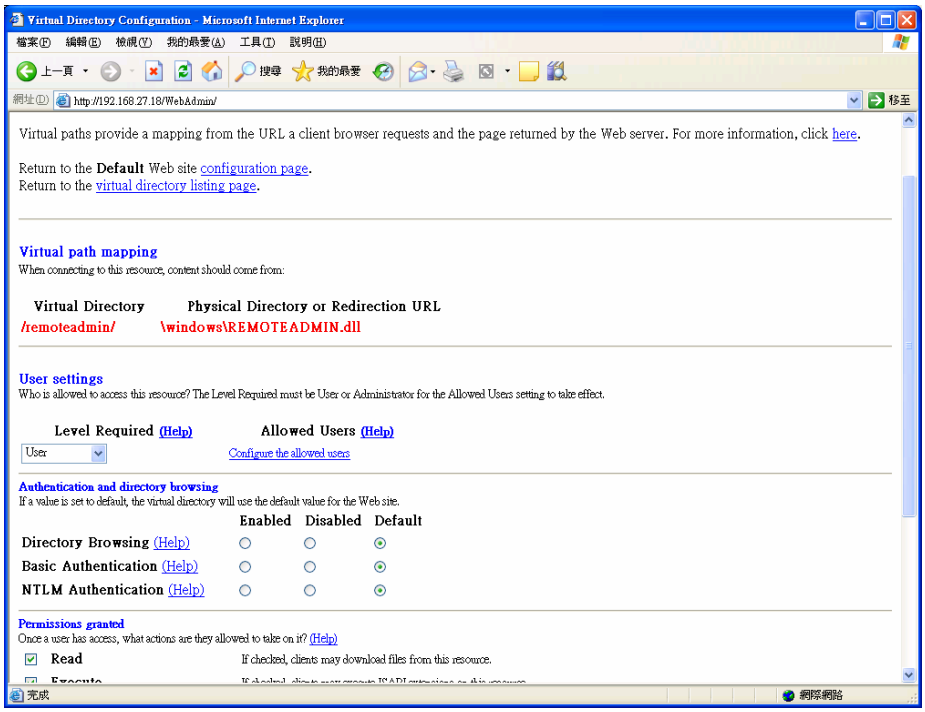
After the logon information you could see the standard Web server Administration page.


Web Server Configuration - Microsoft Internet Explorer
Home | Instructions | Logging | SSL Configuration | Restart Web Server
Web Server Configuration
The Web Server Administration (WebAdmin) page for the Windows CE Web Server enables you to remotely administer your Web server using your Web browser. Use WebAdmin to manage the accessibility, security, and file sharing features of your Web server, including the following tasks:
Configure which files are shared and how they are accessed.
Configure which users have access to which files.
Configure the authentication protocols the Web server will use.
View and configure the Web server log.
Caution: Incorrectly configuring the Web server increases the likelihood a hacker could gain control of your Windows CE device and the likelihood that the system will be inaccessible. The Web server configuration is intended for advanced users only. For more information, refer to the help topics included with the Web server or consult a System Administrator.
Choose a Web site
A Web server can contain multiple Web sites. You can configure a variety of options for each Web site created on your Web server, including virtual directories, authentication, and directory browsing. For more information, see configuring Web sites. If you do not have multiple Web sites, all requests will be processed on the Default Web site.
Select an existing Web site or create a new one:
Default Web site
Modify
Create a new Web site
CreateNew
Windows CE Version: (5.0) Build Version: (1400) SysVersion: (1400)
?2000-2002 Microsoft Corporation. All rights reserved.

In this administration page, you can create a new web site or create a virtual web path for your web application.


Virtual Directory List - Microsoft Internet Explorer
Home | Instructions | Logging | SSL Configuration | Restart Web Server
Virtual Directory Configuration
Virtual directories provide a mapping from the URL a client browser requests and the page returned by the Web server. For more information, click here.
Return to the Default Web site configuration page.
Virtual Path
Physical Path
/ \windows\www\wwwpub\ Modify Delete
/WebAdmin/ \windows\httpdadm.dll Modify
/MsmqAdmin/ \windows\msmqadmext.dll Modify
/Msmq/ \windows\srmpisapi.dll Modify
/SysAdmin/ \windows\sysisapi.dll Modify
/remoteadmin/ \windows\REMOTEADMIN.dll Modify
/remoteadminimages/ \windows\www\remoteadmin\images Modify
/upnp/ \windows\upnp\ Modify
/upnpisapi/ \windows\upnpsvc.dll Modify
Create a new virtual directory
Windows CE Version: (5.0) Build Version: (1400) SysVersion: (1400)
?2000-2002 Microsoft Corporation. All rights reserved.

You can also change the authentication for each web virtual directory.


Virtual Directory Configuration - Microsoft Internet Explorer
http://192.168.27.18/WebAdmin/
Virtual paths provide a mapping from the URL a client browser requests and the page returned by the Web server. For more information, click here.
Return to the Default Web site configuration page.
Return to the virtual directory listing page.
Virtual path mapping
When connecting to this resource, content should come from:
Virtual Directory
Physical Directory or Redirection URL
/remoteadmin/
\windows\REMOTEADMIN.dll
User settings
Who is allowed to access this resource? The Level Required must be User or Administrator for the Allowed Users setting to take effect.
Level Required (Help)
Allowed Users (Help)
User
Configure the allowed users
Authentication and directory browsing
If a value is set to default, the virtual directory will use the default value for the Web site.
Enabled
Disabled
Default
Directory Browsing (Help)
Basic Authentication (Help)
NTLM Authentication (Help)
Permissions granted
Once a user has access, what actions are they allowed to take on it? (Help)
Read
If checked, clients may download files from this resource.

4

Boot Loader and Console Port

This chapter describes how to connect the EM-2260 to a PC for the debugging and testing purposes. For clarity, this PC is called a development workstation and the EM-2260 computer is called a target computer.

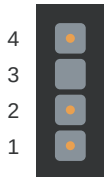
The following topics are covered in this chapter:

- **Console Ports**
- **Operating EM-2260 Computer Via Serial Console**
- **Go to Boot Loader Menu from Console**
- **Firmware Upgrade Procedure**

Console Ports

There is a 4-pin pin-header RS-232 console port designed for serial terminals, which gives users a convenient way of connecting the development workstation (The PC) to the console utility of the target computer (The EM-2260). This method is particularly useful when using the computer for the first time or for debugging while the system cannot boot up. A special Serial Console Cable (Optional) is needed for this function.

Serial Console Port & Pinouts



Pin	Signal
1	TxD
2	RxD
3	NC
4	GND

Serial Console Cable

ATTENTION

You do not need Console Port to operate this computer. Console Port and Serial Console Cable are only for debugging purpose.

Operating EM-2260 Computer Via Serial Console

Follow the following steps to operate EM-2260 computer via serial console port.

1. Power off EM2260.
2. Connect the serial Console Cable.
3. Go back to the development workstation and start a terminal program (for example, HyperTerminal or PComm) by using the settings shown below for the COM port.

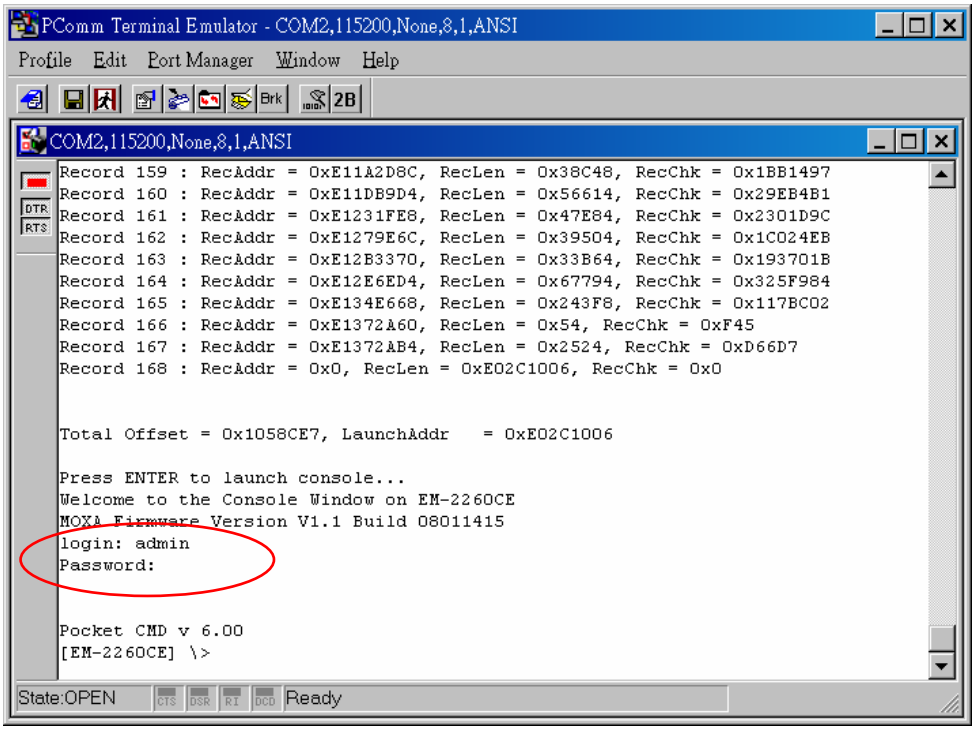
Baud rate	115200bps
Parity	None
Data bits	8
Stop bits	1
Flow Control	None
Terminal	ANSI

4. Power on to cold reset EM-2260, it may takes 30 to 60 seconds for the operating system to boot up.

5. After a successful connection, type the login name and password as requested to logon the computer. The default values are both "admin".

   Login: admin

   Password: admin


PComm Terminal Emulator - COM2,115200,None,8,1,ANSI
Profile Edit Port Manager Window Help
COM2,115200,None,8,1,ANSI
Record 159 : RecAddr = 0xE11A2D8C, RecLen = 0x38C48, RecChk = 0x1BB1497
Record 160 : RecAddr = 0xE11DB9D4, RecLen = 0x56614, RecChk = 0x29EB4B1
Record 161 : RecAddr = 0xE1231FE8, RecLen = 0x47E84, RecChk = 0x2301D9C
Record 162 : RecAddr = 0xE1279E6C, RecLen = 0x39504, RecChk = 0x1C024EB
Record 163 : RecAddr = 0xE12B3370, RecLen = 0x33B64, RecChk = 0x193701B
Record 164 : RecAddr = 0xE12E6ED4, RecLen = 0x67794, RecChk = 0x325F984
Record 165 : RecAddr = 0xE134E668, RecLen = 0x243F8, RecChk = 0x117BC02
Record 166 : RecAddr = 0xE1372A60, RecLen = 0x54, RecChk = 0xF45
Record 167 : RecAddr = 0xE1372AB4, RecLen = 0x2524, RecChk = 0xD66D7
Record 168 : RecAddr = 0x0, RecLen = 0xE02C1006, RecChk = 0x0
Total Offset = 0x1058CE7, LaunchAddr = 0xE02C1006
Press ENTER to launch console...
Welcome to the Console Window on EM-2260CE
MOXA Firmware Version V1.1 Build 08011415
login: admin
Password:
Pocket CMD v 6.00
[EM-2260CE] \>
State:OPEN
Ready

Go to Boot Loader Menu from Console

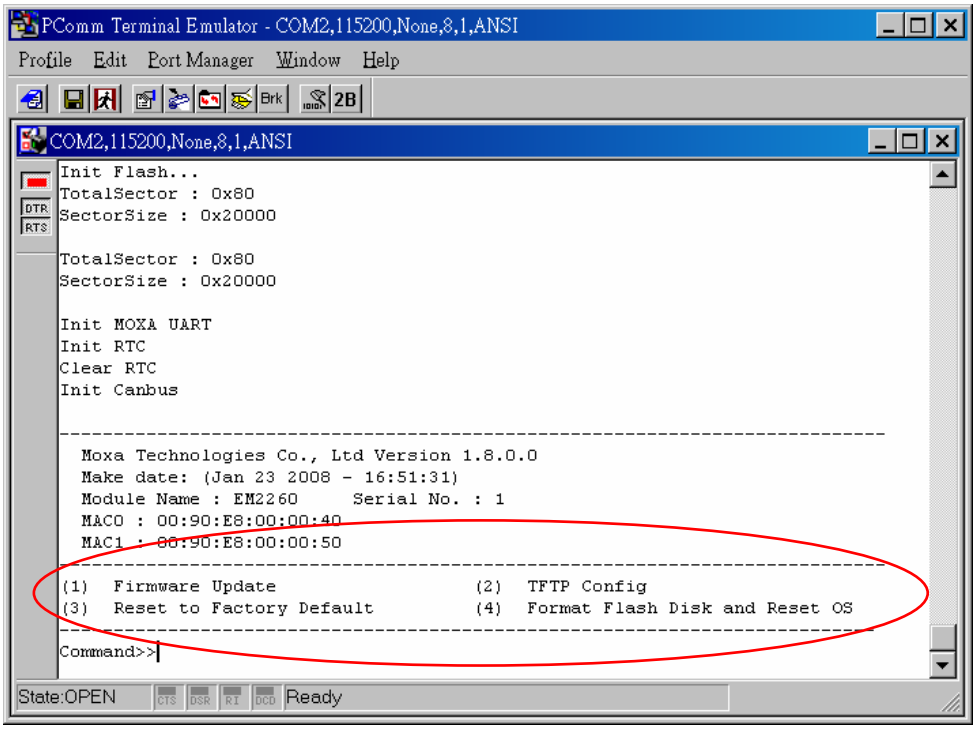
If the computer is not working properly or the system cannot boot up successfully. You can use following steps to go to Boot Loader menu.

1. Power off EM2260.
2. Connect the serial Console Cable.
3. Go back to the development workstation and start a terminal program (for example, HyperTerminal or PComm) by using the settings shown below for the COM port.

Baud rate	115200bps
Parity	None
Data bits	8
Stop bits	1
Flow Control	None
Terminal	ANSI

4. Hold "DEL" key continuously.

5. Power on EM-2260. You should see below screen in few seconds.



There are four functions:

Reset to Factory Default: You can turn on the flag to enforce the WinCE 6.0 to do the "reset to factory" default.

Format Flash Disk and Reset OS: The WinCE FAT file system has the possibility to be damaged by unstable power or improper application execution. If the FAT table is crashed you may not be able to boot the OS up. In such case, you can try to format the file system and reboot EM-2260.

At the EM-2260 startup, it will check the file system and re-partition it if the file system is empty.

Firmware Update: If you found a new firmware from MOXA web site, you can upgrade the firmware by this function.

TFTP Config: In conjunction with Firmware Update, this function is used to set IP address of both server PC and target system (EM-2260), and to transfer file from server PC to target system.

ATTENTION

There is a very small possibility that unstable power or improper application execution may damage not only FAT file system but also WinCE itself. In such case, you can try Firmware Upgrade (Re-program) and reboot EM-2260 again.

Firmware Upgrade Procedure

To upgrade the EM-2260 firmware, you must have the firmware upgrade installation file. This firmware installation file is included in the released software CD. You can also download it from MOXA Download Center if there is newly released, the URL is listed below.

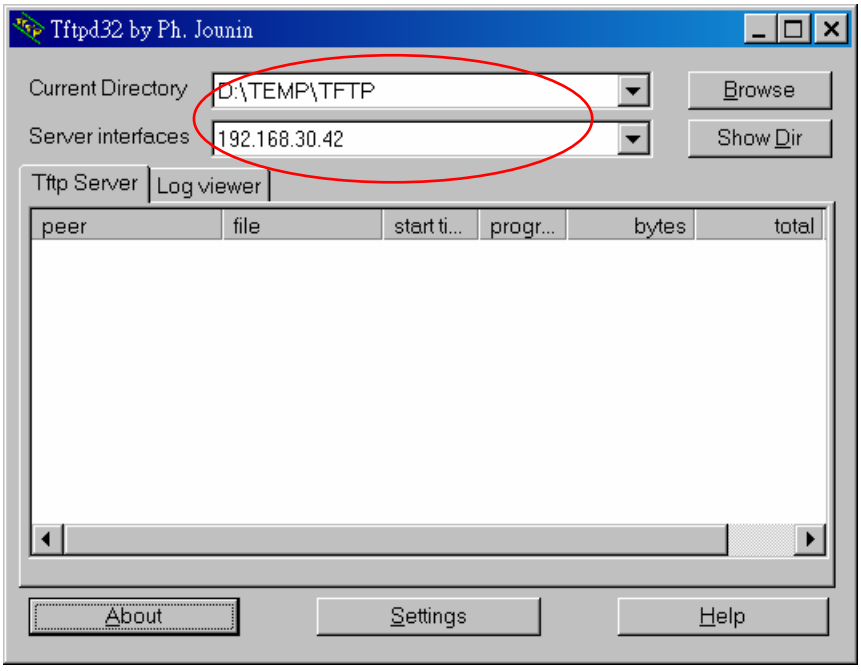
http://web4.moxa.com/support/download_center.asp

1. Get the firmware upgrade installation file

   (In this example, EM-2260-CE_V1.1_Build-08011415.hfm).

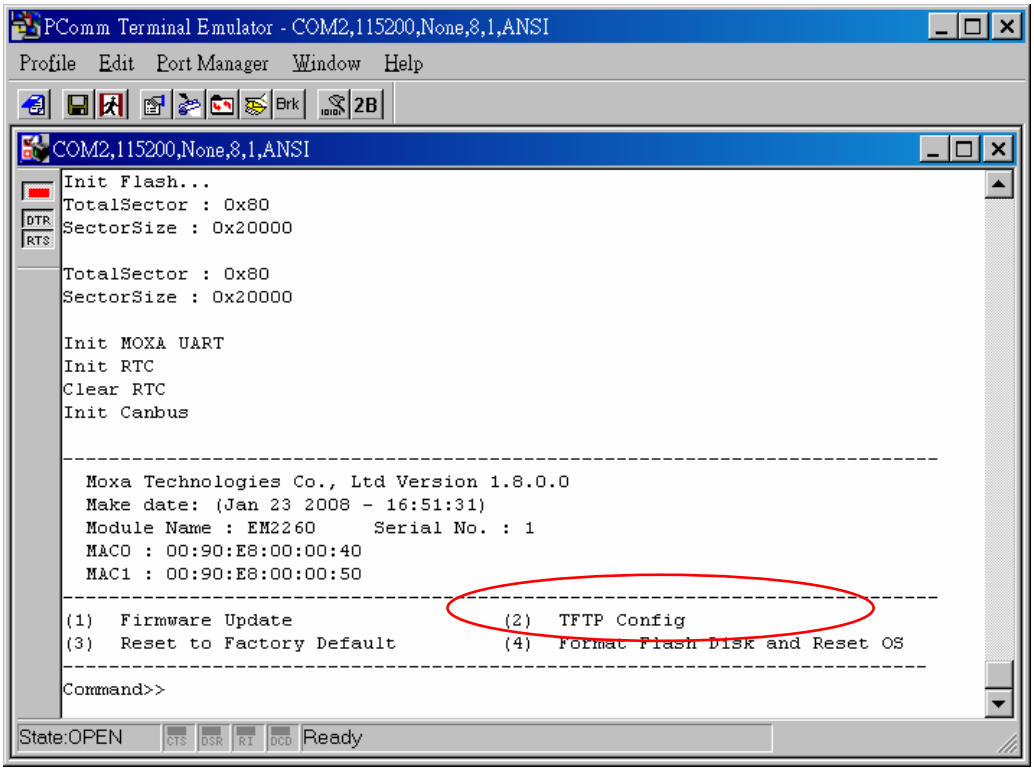
2. Connect target computer (The EM-2260) to development workstation (The PC) through Ethernet port LAN2.

3. Execute TFTP utility on the development workstation (The PC), and set correct server IP and file directory path. (In this example, 192.168.30.42).

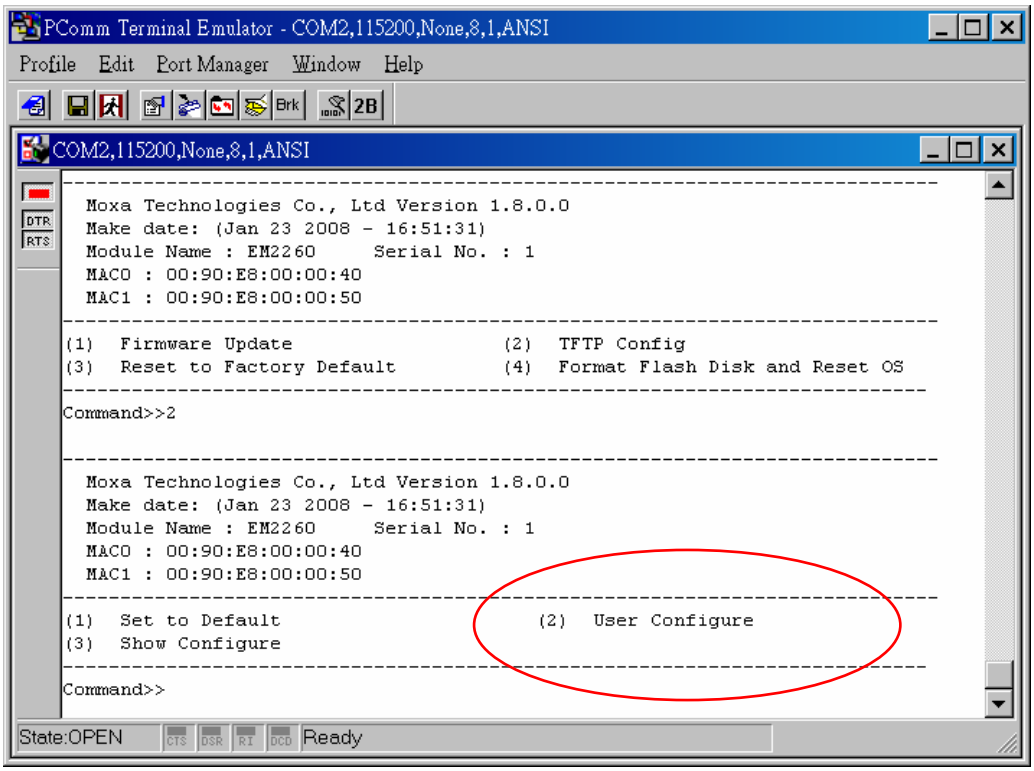


4. Go to the Boot Loader menu from Console. (See the earlier section.)

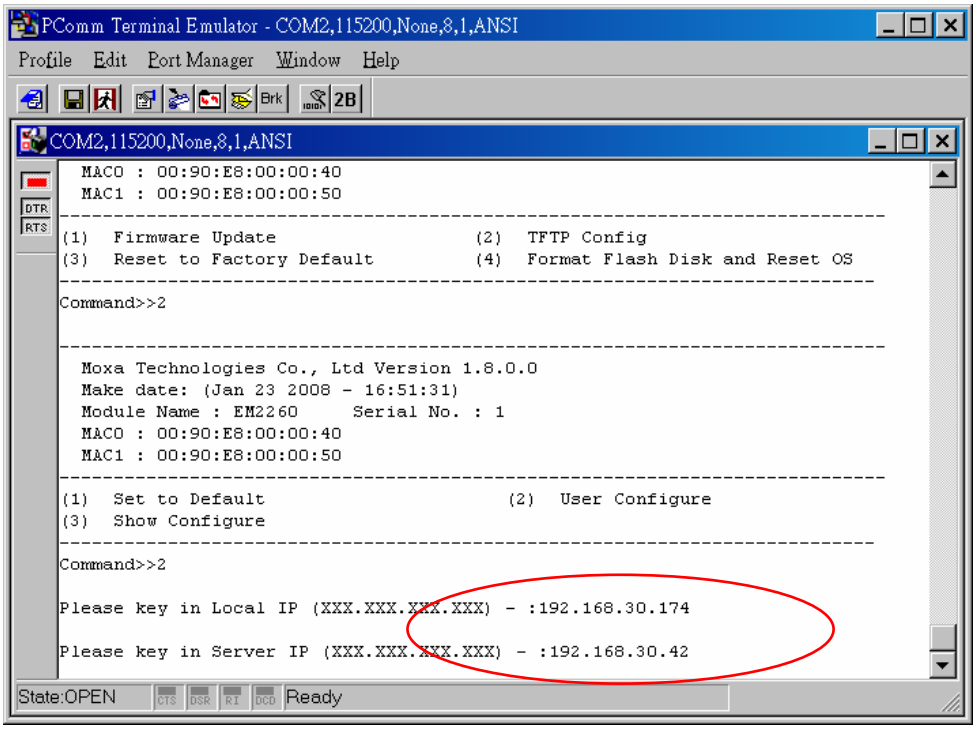
5. Select **"TFTP Config"**.



6. Next, Select **"User Configure"**.

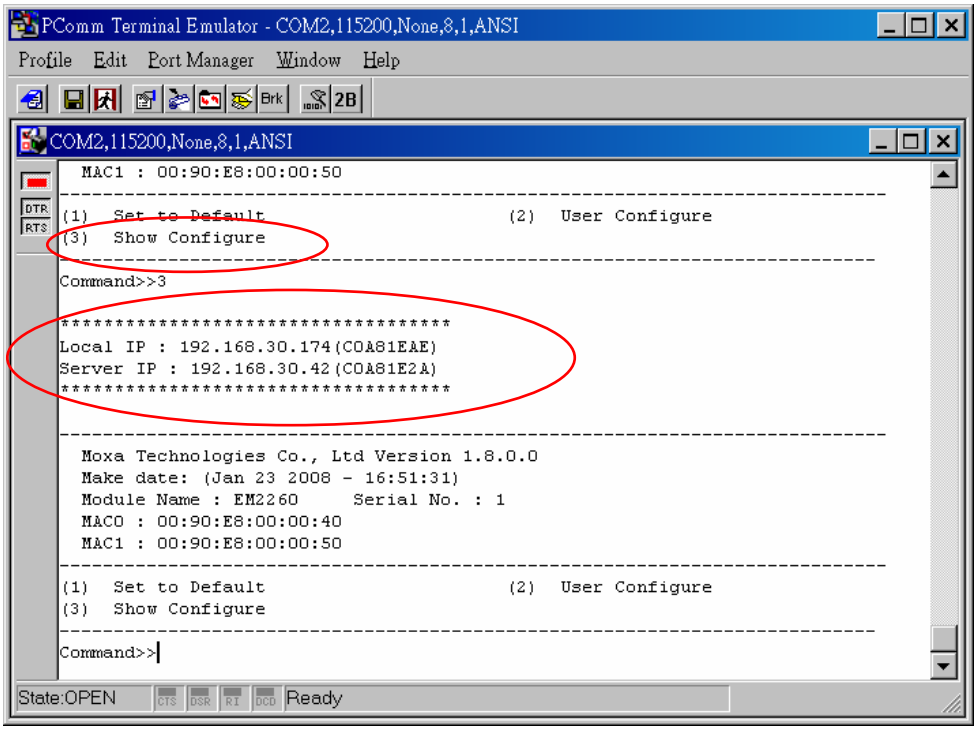

PComm Terminal Emulator - COM2,115200,None,8,1,ANSI
Profile Edit Port Manager Window Help
COM2,115200,None,8,1,ANSI
Moxa Technologies Co., Ltd Version 1.8.0.0
Make date: (Jan 23 2008 - 16:51:31)
Module Name : EM2260 Serial No. : 1
MAC0 : 00:90:E8:00:00:40
MAC1 : 00:90:E8:00:00:50
(1) Firmware Update (2) TFTP Config
(3) Reset to Factory Default (4) Format Flash Disk and Reset OS
Command>>2
Moxa Technologies Co., Ltd Version 1.8.0.0
Make date: (Jan 23 2008 - 16:51:31)
Module Name : EM2260 Serial No. : 1
MAC0 : 00:90:E8:00:00:40
MAC1 : 00:90:E8:00:00:50
(1) Set to Default (2) User Configure
(3) Show Configure
Command>>
State:OPEN
Ready

7. Then, Input Local IP Address (EM-2260) and Server IP Address (TFTP host IP Address).

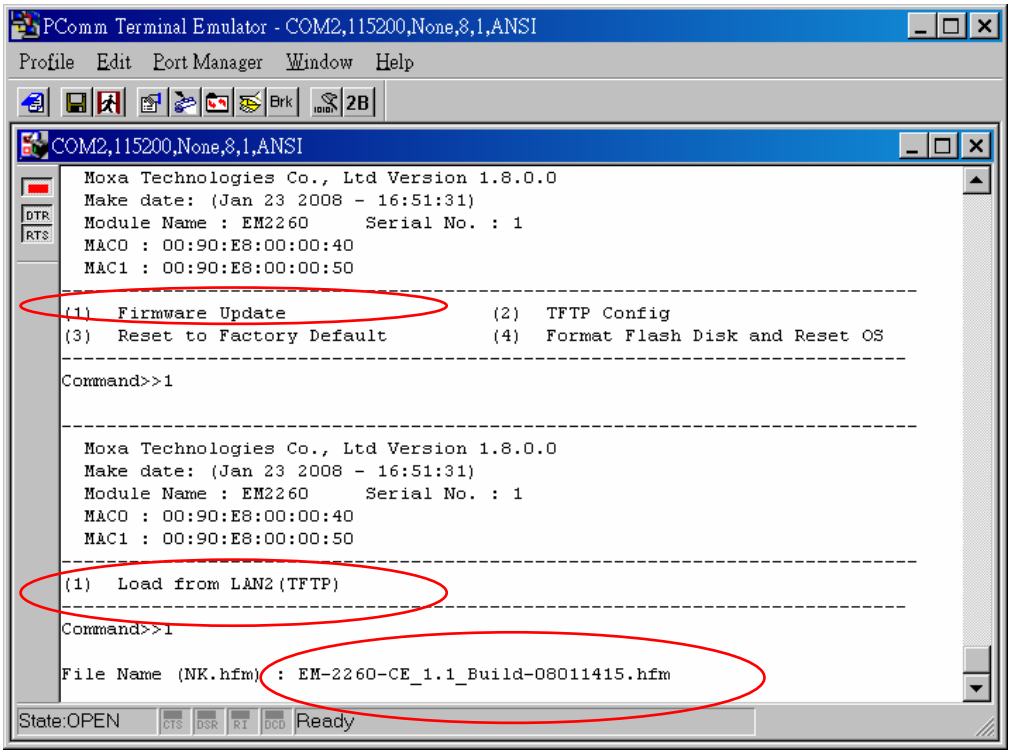

PComm Terminal Emulator - COM2,115200,None,8,1,ANSI
Profile Edit Port Manager Window Help
COM2,115200,None,8,1,ANSI
MAC0 : 00:90:E8:00:00:40
MAC1 : 00:90:E8:00:00:50
(1) Firmware Update (2) TFTP Config
(3) Reset to Factory Default (4) Format Flash Disk and Reset OS
Command>>2
Moxa Technologies Co., Ltd Version 1.8.0.0
Make date: (Jan 23 2008 - 16:51:31)
Module Name : EM2260 Serial No. : 1
MAC0 : 00:90:E8:00:00:40
MAC1 : 00:90:E8:00:00:50
(1) Set to Default (2) User Configure
(3) Show Configure
Command>>2
Please key in Local IP (XXX.XXX.XXX.XXX) - :192.168.30.174
Please key in Server IP (XXX.XXX.XXX.XXX) - :192.168.30.42
State:OPEN
Ready

8. Next, Select **"Show Configure"** to check configuration of local IP and server IP.

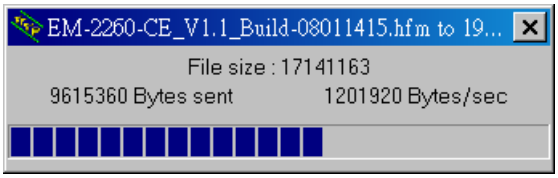
9. After confirm the IP configuration, press **[ESC]** to go back main menu for next step.

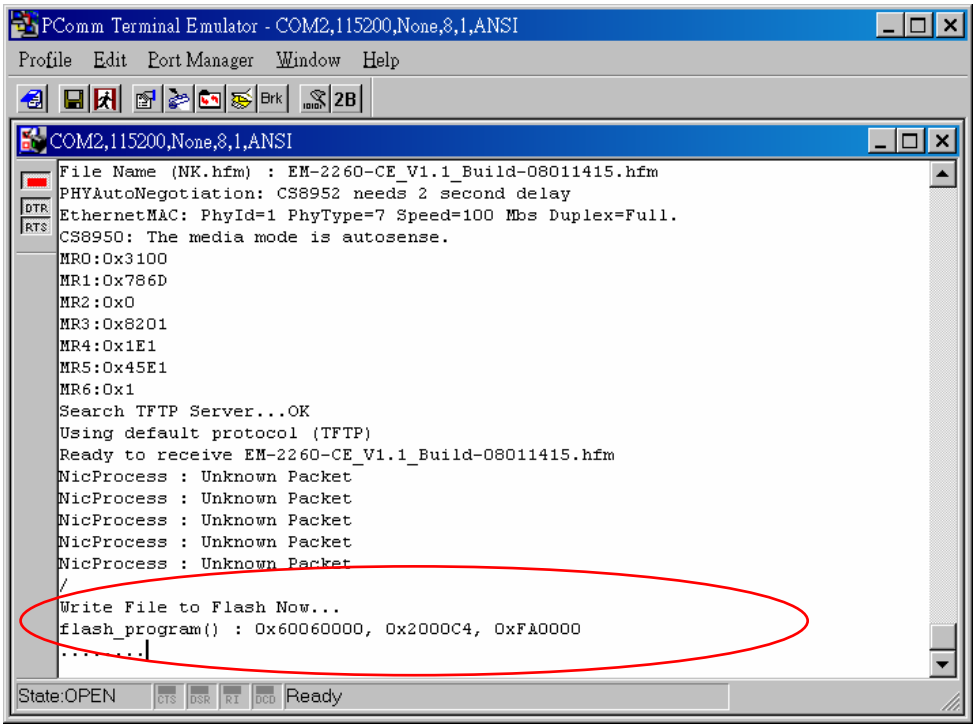


10. Select **"Firmware Update"**.
11. Next, Select **"Load from LAN2 (TFTP)"**.
12. Input the firmware file name (e.g. EM-2260-CE_V1.1_Build-08011415.hfm) and the Press **[Enter]**.

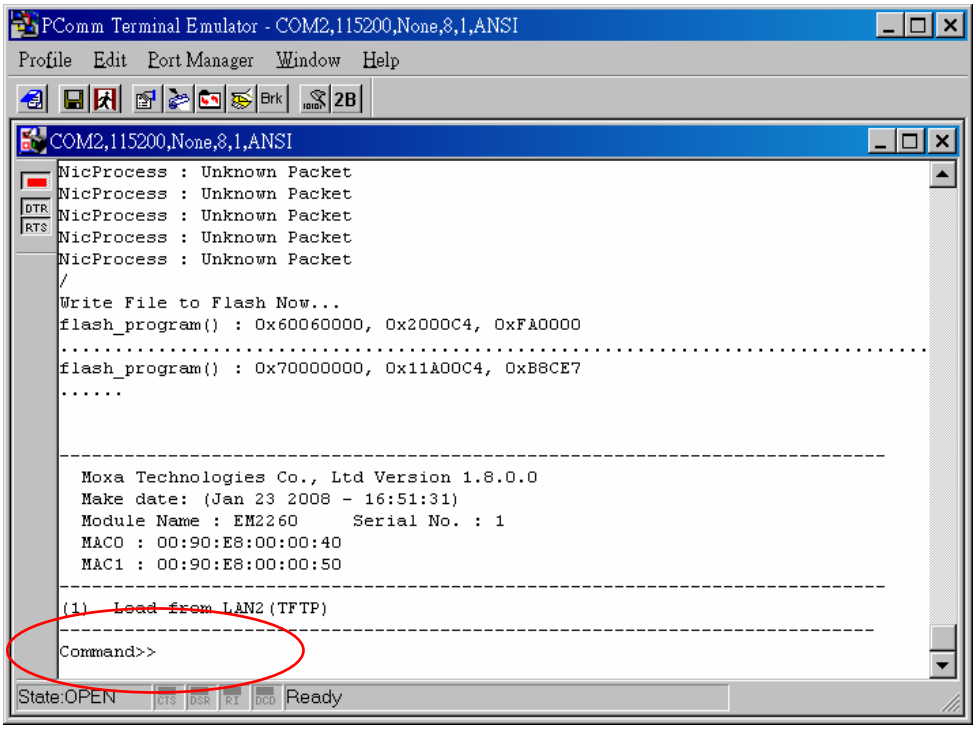

PComm Terminal Emulator - COM2,115200,None,8,1,ANSI
Profile Edit Port Manager Window Help
COM2,115200,None,8,1,ANSI
Moxa Technologies Co., Ltd Version 1.8.0.0
Make date: (Jan 23 2008 - 16:51:31)
Module Name : EM2260 Serial No. : 1
MAC0 : 00:90:E8:00:00:40
MAC1 : 00:90:E8:00:00:50
(1) Firmware Update (2) TFTP Config
(3) Reset to Factory Default (4) Format Flash Disk and Reset OS
Command>>1
Moxa Technologies Co., Ltd Version 1.8.0.0
Make date: (Jan 23 2008 - 16:51:31)
Module Name : EM2260 Serial No. : 1
MAC0 : 00:90:E8:00:00:40
MAC1 : 00:90:E8:00:00:50
(1) Load from LAN2 (TFTP)
Command>>1
File Name (NK.hfm) : EM-2260-CE_1.1_Build-08011415.hfm
State:OPEN
Ready

13. The TFTP utility on the development workstation (The PC) and Boot Loader on the target computer will start to transfer firmware file. In the mean time, firmware will be updated automatically.





14. Please wait until the **"Command>>"** prompt appears again and reboot the system.



ATTENTION

Do NOT switch off power supply during firmware update, otherwise the computer and Boot Loader may crash.